Neutrinos at the Main Injector (NuMI) Project

Project No. 98-G-304
Progress Report No. 59
October 1-31, 2003
(G. Bock, A.L. Read - Editors)
(NuMI-982)

I. PROJECT DESCRIPTION

The NuMI Project provides for the construction of an intense, variable energy, beam of neutrinos using the Fermilab Main Injector, as well as large underground neutrino detectors located at Fermilab and Soudan, Minnesota. The purpose of the project is to enable a new generation of long baseline neutrino experiments that can decisively detect and accurately measure neutrino oscillations. Detection of such oscillations would firmly establish a non-zero value of neutrino mass. The neutrino beam will be of sufficient energy that experiments capable of identifying muon neutrino to tau neutrino oscillations are feasible. The scope of the NuMI Project includes the excavation of large underground laboratories to house the neutrino beam system and the MINOS detectors.

II. OVERVIEW OF PROJECT STATUS – G. Bock

This month the project continued to make good progress towards completion. It is now 93% complete.

Progress on the Service Buildings and Outfitting (SBO) contract continues to be good. Beneficial occupancy of the MI-65 Target Area occurred as planned on October 20, 2003. The projected date for occupancy of the MINOS area remains January 31, 2004. There was one recordable injury this month—a worker strained a shoulder during electrical installation activities. Contingency use to date and future anticipated use remain within our plan.

Work on technical components continues on or ahead of schedule, and this part of the project has now made the transition from fabrication to installation. Installation progressed well in the Main Injector tunnel during the accelerator complex shutdown and installation activity commenced in the newly acquired MI-65 facility.

In October the Far Detector took atmospheric neutrino data, and the CALDET run at CERN was completed. Assembly of the Near Detector electronics racks continued at Fermilab.

More detailed information on the project's progress and status this month follows in the rest of this report.

III. MASTER SCHEDULE AND FUNDING SUMMARY

The NuMI DOE Project Master Schedule is shown in Figure 1.

The DOE baseline milestones are shown in the figure as solid squares. These fixed milestones are defined in the DOE Project Execution Plan and the Baseline Change Proposal approved in December 2001. Shown as diamonds on the same line are the project's baseline projected dates for achieving the milestones. Actual dates of achieving milestones are shown as inverted black triangles.

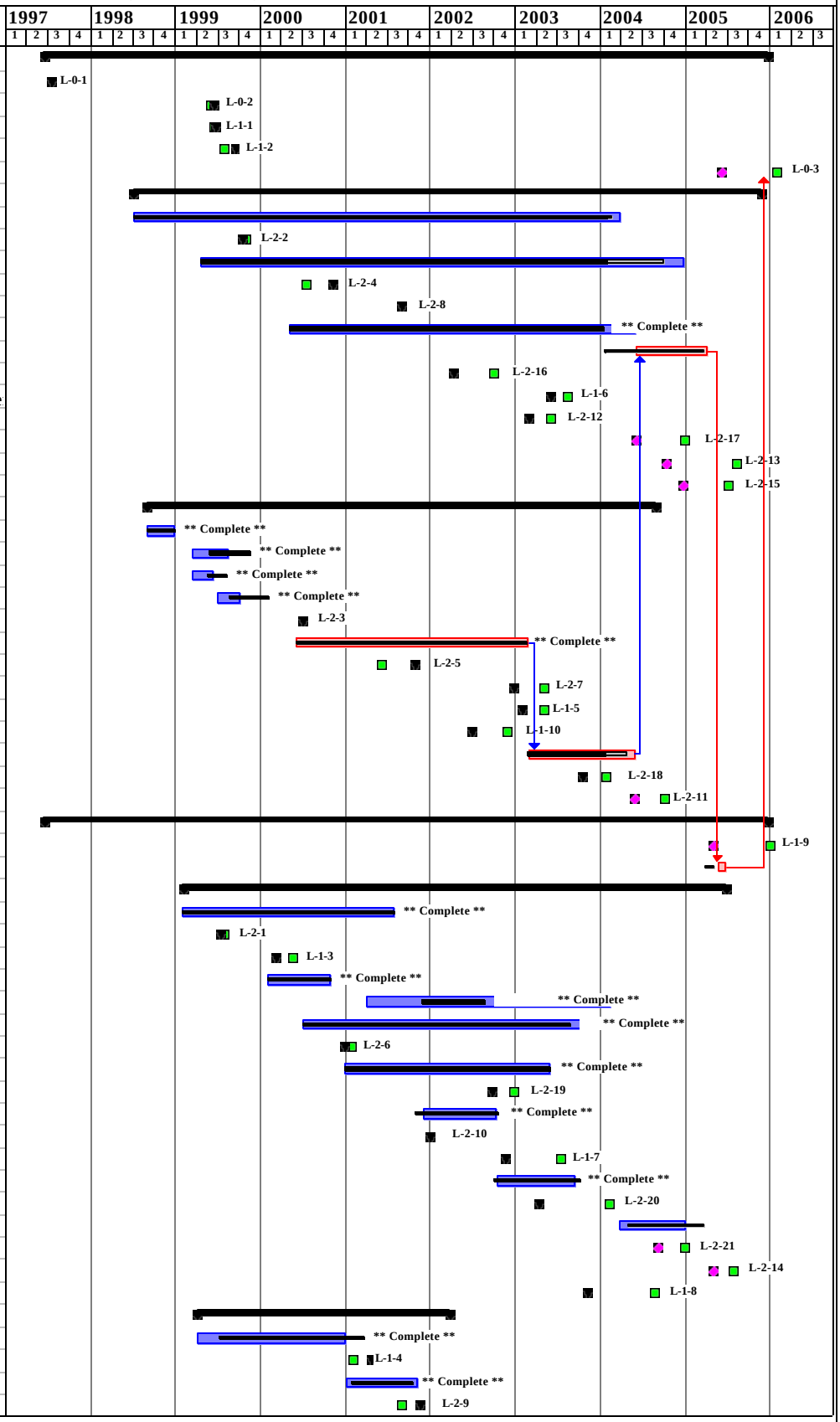
Our actual progress is indicated by black 'thermometer' lines within the horizontal (baseline schedule) bars.

A Table titled "DOE Milestones vs. Current Forecast" follows immediately after the Project Master Schedule. That table lists all the approved Level 0-1-2 DOE milestone dates along with the project's current (and previous month's) forecast for achieving them. The list is sorted by DOE Milestone date. Milestones with forecast dates that have changed significantly in the last month are discussed in Section VIII of this report.

As always the TEC and OPC profiles are presented in the Funding Summary.

11/24/03

NuMI Project
(Fiscal Years)



Project: NuMI_Master_Sched
Date: 11/24/03

Baseline Task
Critical Task
Summary Task
DOE Baseline Milestone
FNAL Current Projection
Milestone Complete
FNAL Forecast
Task Status

DOE Milestone vs Current Forecast
(Sorted by DOE Milestone Date)

12/1/2003

Milestone Description	PEP Milestone #	DOE Milestones (As of 12/2001)	Last Month's Forecast Milestone (9/2003)	Current Month's Forecast Milestone (10/2003)	DOE Milestone Variance (Cal Days)	Monthly Variance (Cal Days)	Notes
CD-1 Approve Mission Need	L-0-1	3/17/1997	3/17/1997	3/17/1997	0	0	Complete
CD-3a Start Limited Construction	L-1-1	2/15/1999	2/23/1999	2/23/1999	(8)	0	Complete
CD-2 Approve Baselines	L-0-2	2/17/1999	2/17/1999	2/17/1999	0	0	Complete
CD-3b Continue Construction	L-1-2	3/31/1999	5/21/1999	5/21/1999	(51)	0	Complete
MINOS Steel Purchase Subcontract Awarded	L-2-1	4/1/1999	3/15/1999	3/15/1999	17	0	Complete
Top of Soudan #8 Mineshaft Located with GPS	L-2-2	6/28/1999	6/16/1999	6/16/1999	12	0	Complete
Far Detector Prototype Erected	L-1-3	1/17/2000	11/10/1999	11/10/1999	68	0	Complete
NTP Issued for Fermilab Underground Subcontract	L-2-3	3/6/2000	3/6/2000	3/6/2000	0	0	Complete
High Current Pulse into Prototype Horn	L-2-4	3/14/2000	7/14/2000	7/14/2000	(122)	0	Complete
CalTech Factory Commissioned	L-2-6	9/29/2000	9/1/2000	9/1/2000	28	0	Complete
Far Detector Excavation Complete	L-1-4	10/2/2000	12/22/2000	12/22/2000	(81)	0	Complete
Fermilab Underground Construction 50% Complete	L-2-5	2/6/2001	6/29/2001	6/29/2001	(143)	0	Complete
Magnets for MI Stub Refurbished	L-2-8	4/30/2001	4/30/2001	4/30/2001	0	0	Complete
Outfitting of Far Detector Enclosure Complete	L-2-9	4/30/2001	7/19/2001	7/19/2001	(80)	0	Complete
Cosmic Rays Observed in Far Detector	L-2-10	3/22/2002	8/31/2001	8/31/2001	203	0	Complete
Technology Choice Made for Muon Monitors	L-2-16	5/30/2002	12/10/2001	12/10/2001	171	0	Complete
Service Building & Outfitting Bid Package Out	L-1-10	7/30/2002	2/25/2002	2/25/2002	155	0	Complete
75% Scintillator Produced	L-2-19	8/30/2002	5/24/2002	5/24/2002	98	0	Complete
Near Detector Hall Excavation Complete	L-2-7	12/30/2002	8/30/2002	8/30/2002	122	0	Complete
Target Hall Excavation Complete	L-1-5	12/30/2002	10/4/2002	10/4/2002	87	0	Complete
Lambertson & C-Magnets Assembled & Tested	L-2-12	2/1/2003	10/31/2002	10/31/2002	93	0	Complete
First Far Detector Super Mod Complete & Tested	L-1-7	3/15/2003	7/24/2002	7/24/2002	234	0	Complete
Inner & Outer Conductors for First Production Horn Assembled	L-1-6	4/14/2003	2/5/2003	2/5/2003	68	0	Complete
Target Service Building Shell Complete	L-2-18	9/30/2003	6/17/2003	6/17/2003	105	0	Complete
Near Plane Pre-assembly Complete	L-2-20	10/10/2003	12/17/2002	12/17/2002	297	0	Complete
Far Detector Complete & Tested	L-1-8	4/25/2004	7/9/2003	7/9/2003	291	0	Complete
Beneficial Occupancy of Service Buildings at Fermilab	L-2-11	5/31/2004	1/30/2004	1/30/2004	122	0	
Start Commissioning with Both Near and Far DAQ	L-2-21	8/30/2004	5/4/2004	5/4/2004	118	0	
Complete Installation of Horn Power Supply	L-2-17	9/1/2004	2/6/2004	2/6/2004	208	0	
MI Stub Installation Complete	L-2-15	3/11/2005	8/23/2004	8/20/2004	203	3	
Near Detector Complete & Tested	L-2-14	3/31/2005	12/28/2004	12/27/2004	94	1	
First Horn Installed	L-2-13	4/7/2005	6/15/2004	6/14/2004	297	1	
Start Commissioning	L-1-9	9/1/2005	12/28/2004	12/28/2004	247	0	
CD-4 Start Operations	L-0-3	9/30/2005	2/4/2005	2/4/2005	238	0	End of Commissioning

IV. FUNDING SUMMARY (K$)

Funding Summary (as of 10/31/2003), amounts in thousands

YEAR	TEC (NuMI Facility) Appropriations	OPC (MINOS, Soudan) Obligations
		Actual costs through FY02. Plan from Baseline Change Proposal
Prior FY's	0	1,417 actual
FY98	5,500	2,348 actual
FY99	14,300	4,114 actual
FY00	22,000	11,324 actual
FY01	22,949[1]	13,598 actual
FY02	11,400	17,227 actual
FY03	19,842[1,2,3]	7,067 actual
		Future Funding Plan
FY04	12,500[2]	4,605 balance
FY05	751[2,3]	500
TOTALS	**109,242**	**62,200**

Note [1]: FY01 Rescission removed $51K from plant line and $26K from OPC. We planned the restoration of these funds in FY03.

Note [2]: FY03, FY04, and FYY05 plant line funds as recommended for inclusion in the Baseline Change Proposal by the September DOE Review and approved in December 2001. This is the $33.042M in additional funding in the rebaseline proposal from Project Management.

Note [3]: FY03 Rescission removed $251K from plant line. We show the restoration of these funds in FY05.

TEC Funding Appropriated,
Not yet authorized
0 Reflects $251K removed from FY03. See Note 3 above.

Total TEC funding authorized
95,991

TEC Obligations to date, (Not including requisitions in progress)
92,360 57,244 **OPC Obligations to date**

TEC Funding authorized but not obligated
3,631

V. NARRATIVE HIGHLIGHTS

MANAGEMENT HIGHLIGHTS – G. Bock

Change Request #252 was processed, drawing on $97K of contingency. This CR corrected an error made last month in CR#242 which returned $114K to contingency. CR #242 should have included a correction for past labor overruns, but did not.

The project prepared for the upcoming DOE Office of Science review scheduled for November 13-14. Jeff Salmon from Office of Science Headquarters visited the NuMI facility and toured MI-65 this month.

The Project continues to report its progress against its own plan, which has a more aggressive schedule than that required by DOE milestones. The Project Support staff has developed a chart that provides the DOE NuMI Project Manager with a progress report against the DOE milestones.

Procurement Highlights – R. Huite

NuMI Tunnels and Halls (NuMI Closeout Team)

The closeout team is responsible for the timely and effective closeout of the S. A. Healy contract. This team is organized with several sub-groups bringing together a variety of as-needed expert help, i.e., a negotiating group, claims and legal strategy expertise, geotechnical experts, cost estimators, auditors, procurement, etc.

The NuMI Tunnels and Halls Closeout Team consists of W. D. Wightman & Company (T. Wightman – Lead Negotiator), R. Helmuth (Claims professional); and Montgomery Watson Harza (J. Kovacich – Technical Support). Fermilab support continues to be provided by C. Laughton – BD/NuMI, R. Huite – BSS/Procurement and G. Leonard, BSS/Legal. The NuMI Tunnels and Halls Closeout Team continued to evaluate DRB recommendations, S. A. Healy claims and other correspondence. Additional outside professionals are retained as the NuMI Closeout Team may require.

On September 29, 2003, the Fermilab Director authorized Mr. W. D. Wightman to negotiate on behalf of Universities Research Association, Inc. with S. A. Healy for the settlement of their claims engendered by their work under the NuMI Tunnels and Hall Contract. In addition, Mr. Wightman is authorized to represent URA in all matters relating to the settlement of these claims involving the Disputes Review Board, outside consultants and other interested parties.

BSS/Procurement support to the NuMI Tunnels and Halls Closeout Team continues to provide oversight of the subcontract terms and conditions, tracking of invoice/payment, and ensuring compliance with the Fermilab Procurement Policy and Procedures manual and continues to be provided by the NuMI Procurement Administrator. The NuMI Senior Procurement Coordinator (R. Huite) attends the NuMI Project Manager's weekly staff meeting (each Monday); a weekly closeout status meeting (each Monday) with the NuMI Manager (G. Bock); a weekly status

meeting with the BSS/Procurement Manager (J. Collins); a weekly meeting (each Tuesday) with the BSS/Procurement Manager, DOE-FAO Procurement Specialist (J. Chapman), and others as necessary. In addition, meetings with Head, BSS as may be necessary.

Six disputes have been presented to the Disputes Review Board. DRB recommendations have now been received on all six of the issues:

(1) DRB Recommendation No. 3, August 2, 2002 – Geocompostie Drainage Strips/Shotcrete (FNAL No. 40) (Hearing Date – May 9, 2002), for quantum.

(2) DRB Recommendation No. 1, August 21, 2002 – Enhanced Water Treatment Facilities (FNAL No. 14) (Hearing Date – April 4, 2002), for entitlement.

(3) DRB Recommendation No. 2, November 12, 2002 -- Carrier Tunnel Clay Seam DSC at Station 4+20 (SAH No. 17/FNAL No. 53 (Hearing Date – April 4 & 5, 2002), for quantum.

(4) DRB Recommendation No. 4, November 12, 2002 -- MINOS Shaft Excavation Vertical DSC (SAH No. 32/FNAL No. 20) (Hearing Date – May 9 & 10, 2002 and rebuttal July 9, 2002), for quantum.

(5) DRB Recommendation No. 5, April 29, 2003 -- Safety Stoppages & Constraints (SAH No. 68/FNAL No. 62) (Hearing Date -- November 12 and 13, 2002), for entitlement.

(6) DRB Recommendation No. 6, October 24, 2003 -- Decay Tunnel – Clay Seams and Groundwater/TBM (SAH NO. 69/FNAL No. 63) (Hearing Date -- September 17 and 18, 2002), for entitlement and quantum.

Fermilab agreed to confirm a date for a future Decay Tunnel Bad Ground Differing Site Conditions (SAH No. 62/FNAL No. 67) hearing on the understanding that the outstanding recommendation No. 6 would be delivered during the week of October 20, 2003. This hearing is now scheduled for November 10 and 11, 2003 at Fermilab. Fermilab's position paper will be submitted during the week of October 27, 2003.

As a result of an October 14, 2003, meeting between Fermilab, S. A. Healy, and the three DRB members, dates were mutually agreed to for future hearings.

The S. A. Healy's subcontract No. 527522 totals $34,629,667 through Supplemental Agreement No. 16. Total amount invoiced from S. A. Healy to date is $34,480,116 through and including Invoice No. 68 Rev. 1. Payment has been made in the amount of $31,621,265.36 and $2,858,850.64 retained.

As of October 15, 2003, SAH identified 40 outstanding claim issues relating to the NuMI Tunnels and Halls project, as follows:
6 Claims heard by the DRB
9 Potential DRB Claims identified by SAH
25 Non-DRB Claims have been identified by SAH.

SAH's potential DRB and Non-DRB lists include 12 Fermilab claims for deductive contract adjustments. The parties have exchanged all outstanding claims except for about eight for which Healy has "reserved their rights" for later presentation.

The following is a summary total of the numbered correspondence (i.e., letters and field communications/memorandums) that have been entered into the NCMO tracking database:

SAH to NuMI Numbered letters – 1306
NuMI to SAH Numbered Letters – 868

On October 27, 2003, Fermilab entered into a purchase order with Holland & Knight LLP, Oakbrook Terrace, Illinois to provide professional legal services as may be required to provide advice and counsel on legal matters related to the NuMI Tunnels & Halls contract negotiation closeout team.

NuMI Surface Buildings and Outfitting

The subcontract was awarded to Ragnar Benson, Inc. (RBI), of Park Ridge, Illinois in the amount of $17,880,000 million. The NuMI SB&O Construction Manager for this subcontract is Elaine McCluskey. The Business Services Section/Senior Procurement Administrator is R. Cibic. The following Supplemental agreements have been issued:

Supplemental Agreement No. 1 – EC-001, Temporary Water Treatment at MINOS -- $207,508.92
Supplemental Agreement No. 2 – EC-003, Power Clarifications and back-up Generator -- $19,057.50
Supplemental Agreement No. 3 – EC-002, EC-005, EC-006, & EC-007 -- $99,033.00
Supplemental Agreement No. 4 -- EC-009, EC-010, EC-011, EC-012, EC-013, EC-014, & EC-015 -- $28,813.39
Supplemental Agreement No. 5 – EC-004, EC-008, EC-021, EC-022, EC-025, EC-027, & EC-034 -- $159,477.99
Supplemental Agreement No. 6 – EC-017, EC-018, EC-023, EC-031, & EC-032 -- $122,390.74
Supplemental Agreement No. 7 – EC-019, EC-020, EC-028, EC-033, EC-037, EC-038, EC-040, EC-042, EC-043, EC-044, EC-046, EC-048, EC-049, EC-051, EC-053, EC-054, EC-056 -- $140,304.33
Supplemental Agreement No. 8 – EC-026, EC-020b, EC-065, EC-050, EC-061 -- $380,547.53
Supplemental Agreement No. 9 – EC-030, EC-035, EC-052A, EC-058, EC-059, EC-060, EC-62, EC-63, EC-064, EC-066 EC-067, EC-072, EC-076 -- $56,962.56
Supplemental Agreement No. 10 – EC-036, EC-069A, EC-075, EC-078, EC-079, EC-080, EC-081, EC084 -- $144,211.83
Supplemental Agreement No. 11 -- Pending

The RBI's subcontract No. 546631 totals $19,236,841.43 through Supplemental Agreement No. 10. Total amount invoiced from RBI to date is $15,568,944.92 through and including Invoice No. 9298, dated 28-Oct-2003. Payment has been made in the amount of $14,323,145.32 and $1,245,799.60 retained. The amount retained was reduced from 10 percent to 8 percent based on the subcontract Incentive Program for fieldwork completed satisfactorily.

On June 19, 2003, RBI submitted their formal claim for the victaulic pipe run up the Decay Pipe Walkway pursuant to Exhibit D of the subcontract. Fermilab is in the process of reviewing and developing its strategy. This claim is still under evaluation.

NTP1 (October 1, 2002) provided for procurement and planning activities to include:

(1) Submission of technical and Subcontract submittals including but not limited to: required schedules, safety and quality control submittals, long-lead item shop drawings, and critical item shop drawing submittals.

(2) Procurement of initial critical and long lead items after coordinate submittals have been approved.

NTP2 (November 22, 2002) authorized commencement of work as required by the terms and conditions of the subcontract. Construction activities continue at both the MINOS and Target sites.

The subcontract incorporates two incentive programs:

(1) Percentage of fieldwork completed satisfactorily: if Fermilab finds that satisfactory progress is being achieved in the field, Fermilab may reduce the percentage retained based on the scheduled contain in the subcontract. This retention rate is adjusted by increments of 2 percent based on fieldwork percentage completed satisfactorily.

(2) Safety performance record: in rewarding the subcontractor for accomplishing the work described within the subcontract without injuries, lost workdays, and/or fatalities within the contractual requirements of the subcontract, Fermilab will reward the subcontractor for fieldwork accomplished over four periods established with the subcontract. The first safety performance period was not achieved due to a missed milestone date and one recordable lost-time accident. RBI and their workforce successfully completed the second safety performance incentive period.

The following is a summary total of the numbered correspondence (i.e., letters and field communications/memorandums) that have been entered into the SB&O tracking database:
SBO to RBI – 333
RBI to SBO – 110
Field Memos (FM) – 0
Field Communications (FC) – 2
NCMO General – 81

The Target Area, including the MI-65 Service building and the below grade Pre-Target area, the Support Rooms, Target Hall, and the Target Shaft, was accepted from Ragnar Benson, Inc., for Beneficial Occupancy by Fermilab at the close of business on Monday, October 20, 2003. This was on time with respect to the revised date of subcontract Milestone No. 7. A punch list of items was generated and a report on completion of the punch list items will be generated.

NuMI Technical Components

The Procurement Coordinator continues to be available to assist the NuMI Project regarding NuMI Technical Components issues. The Procurement Department created a report for tracking all requisitions that have been turned into purchase orders for various projects. This report has been provided to the NuMI Project for their use in tracking status of deliveries. Two additional reports have been created in tracking (1) all requisitions through the review hierarchy and (2) approved requisitions in procurement waiting purchase.

NuMI FACILITY AT FERMILAB
TECHNICAL COMPONENTS (WBS 1.1) – B. Baller, N. Grossman

Overview

Efforts this month were focused on installation of NuMI components in the Main Injector enclosure during the accelerator shutdown. All major extraction channel magnets including the Lambertson Magnets and the C-magnet were installed. Major dipole and quadrupole magnets were installed in the NuMI stub. Power cables were installed and magnet terminations made. A significant amount of instrumentation cable was also installed. With the completion of these major components, we will be able to make good use of unscheduled accelerator shutdowns.

A review of primary beam instrumentation was held on October 24. The committee highlighted the need for an instrumentation coordinator to ensure that the Instrumentation Department is able to satisfy NuMI needs as well as Run II commitments. The committee endorsed the project's decision to proceed with the baseline UT-Austin profile monitor and proposed a formal acceptance test of the first device in January.

Integration and Installation – R. Andrews

General Remarks

October has been an extremely busy month, between the ongoing installation of the Extraction Channel for the NuMI line coming out of the Main Injector and the preparation for and acceptance of the beneficial occupancy of MI-65. With a lot of dedicated effort, both activities have been proceeding as planned, and the work in the Main Injector looks like it will be completed as planned.

During October, all the major mechanical activities planned for the shutdown were completed. This was the result of a tremendous effort by the workers in the tunnel doing a safe, high quality job on time. Details will follow below. Efforts in the Main Injector continued to use the three-week period beyond the regular scheduled seven-week outage to complete as many tasks as possible. This effort was driven by the uncertainty of the short shutdown periods between the end of this shutdown and the shutdown to take place in FY'04. We have several tasks now that can be done during these periods, and all that can de done will reduce the burden on preparation for commissioning next summer.

With the proviso of a punch list of items for Ragnar Benson to complete, we accepted beneficial occupancy of MI-65 at 5:00 PM on November 20th. The floor managers immediately moved in and began implementing the administrative controls and installing the necessary utilities to allow work to proceed. This effort took the better part of a week to complete, but by the end of the first week the work of installation began ramping up,

Main Injector

The Installation Shutdown of '03 began on 8 September 2003. The following activities have been completed:

Removal of the 30' concrete plug between MI enclosure and the NuMI Stub.
Installation of the magnet hangers in the Main Injector (for the extraction magnets.)
Installation of the LCW piping between the stub and the MI enclosure.
Installation of the Monorail in the NuMI Stub.
Magnet Installation in the NuMI Stub.
Lambertson and C-magnet stand and magnet installation.
Extraction channel magnet installation.
Kicker fluorinert cooling system.
Magnet cable termination and connection continues.

MI-65

Installation planning discussions continued during most of the month of October.

Beneficial Occupancy of the MI-65 facility was taken at COB, Monday, October 21, 2003. Installation activities began Tuesday, October 22, 2003. New access procedures were initiated and physical controls to underground enclosures were installed.

Installation activities began with the following activities:

Identified, assembled, and mobilized resources to execute tasks necessary for the installation of the NuMI Target beam line and horn and target shield enclosure.
Prepared the new facility for occupancy and installation activities.
Installed the laboratory phone system to assure emergency communication.
Initiated deliveries of materials and shield steel to the hardstand staging area.
Began layout and installation of the Target Pile "Zero Layer".
Set up tests of the magnet transport system in the pre-target area.

Activities and work plans were reviewed and hazard analysies developed for initial tasks. Procedures for both Rigging and Crane Operations and the Pre-Target Magnet Mover System were reviewed and approved. The issue of jurisdiction over operation of the MI-65 overhead cranes for specific activities was resolved.

MINOS

Once the absorber is stacked 6 feet above the floor level, a fall protection system is needed when stacking the upper blocks. Initially a system was designed that required periodic anchors be

installed in the ceiling of the absorber hall. The potential for water leaks caused by installing the needed anchors rendered this design not feasible. Subsequently, a procedure will be developed that will utilize tie-off points on the absorber blue blocks.

Ongoing discussions explore ways to improve the efficiency of all system installations. A few examples are as follows:
Piping needed for LCW skids may be pre-fabricated.
It appears the passageway to the absorber hall has sufficient width to allow staging blue blocks along its edges.
Rather than haul every Detector plane individually attached to a strongback from new Muon to MSB, un-instrumented planes (one in five for some parts of the Detector) can be stacked and transported in groups of four on one truck trip. Then, at MSB, they will be individually attached to the strongback when lowered into the MINOS Hall.

We commenced a discussion with CD/Datacom regarding the layout/design of a LAN in the MINOS Hall.

Primary Beam (WBS 1.1.1) – S. Childress

Overview

Priority primary beam efforts during October have continued with installation activities in the Main Injector tunnel and NuMI Extraction Enclosure during the extended accelerator system downtime. Very good progress is being made in all aspects of the installation.

Installation of the extraction Lambertson magnets has been advanced by many months from the scheduled July '04 date. These magnets are installed, aligned, under vacuum and undergoing bake-out as the final beam readiness step.

Magnets and Stands

Installation efforts have been completed for both magnet stands and major primary beam magnets, in both the MI 60 area of the Main Injector tunnel and the connecting NuMI Extraction Enclosure. As these areas are accessible only during Main Injector shutdowns, these efforts were current top priorities. Now installed are the full set of 28 major magnets, (3 Lambertsons, 1 C-magnet, 12 Quadrupoles and 12 Dipole bending magnets), in preparation for the resumption of Main Injector beam. Installation crew overtime and Saturday efforts have been used as necessary to complete this effort in the allotted time. MI 60 area magnets have also been rough aligned, to insure positional compatibility with the Main Injector and Recycler rings.

After magnet installation, tunnel cable hookup is well advanced. Most of this work will also be completed during this shutdown.

Technical Division personnel are constructing a prototype EPB dipole shield, to test design effectiveness at controlling external magnetic fields that could impact Recycler ring operation. Extensive measurement checks are also being made in the MI 60 area, to ensure the accuracy of drawings needed to design the dipole shields.

Kicker Magnet System – C. Jensen

Construction efforts for the 3rd kicker magnet and testing with the prototype load have resumed in the last week of October, after resources previously needed for shutdown activities have become available.

Installation of piping for the Fluorinert cooling system, from the service building to the MI 602 tunnel area, has been completed as a task moved forward from the originally planned 2004 installation schedule.

Beam Instrumentation

Preparations for installation of the prototype profile monitor into the MiniBooNE primary beam line have been completed. This effort is now scheduled for the first week in November, after the beam tunnel is accessible following horn system testing.

A review of NuMI primary instrumentation was held on October 24.

Beam Permit System – R. Ducar

Given the shutdown efforts, there is nothing new to report on the Beam Permit System. A review of the System is being planned for January, 2004.

Neutrino Beam Devices (WBS 1.1.2) – J. Hylen, D. Ayres, K. Anderson, A. Stefanik

I. Magnetic Focusing Horns

Production Horns.

Horn 1. Water tank and feet were mounted on horn 1, and a part of our horn hot handling procedure (horn 1 remote motion on lift table) was tested.

Horn 2. Horn 2 is ready and waiting for its water tank and module.

Other. Although not a horn, any significant (few gauss or more) magnetic field in the decay pipe would have focusing affects that would modify the neutrino spectrum. A field mapping of the inside of the decay pipe was done; the field is about 0.3 gauss, which is negligible.

II. Target

Further target vibration testing is still on hold until November. The accord for construction of a spare target has been signed by both FNAL and IHEP; delivery is scheduled for the end of August 2004.

III. Modules

Horn 1 Module. We used the motor drives for the first time; no problems were found. We will calibrate the motion when manpower frees up after the accelerator shutdown.

Horn 2 Module. Horn 2 module is in the final assembly stage. The module itself is finished; all that remains is assembly of the thermocouple feed-through rod. This is expected to be complete in mid-November, well before the milestone date for L-3-216 "Assembly of Horn 2 Module Complete" of 2/26/04.

Target/Baffle Module. Test fitting of the mod-top on the target/baffle module mainframe is beginning. We are on track to meet the milestone date for L-3-235 "Assembly of Target/Baffle Module Complete" of 2/25/04.

Remote Clamp/Stripline block. Work is proceeding for acquisition of two stripline block units, which consist of horn stripline penetrating through shielding blocks with a clamp to attach remotely to a horn. The fabrication of stripline segments should be done early in December. The parts for the shielding block structure are on site but assembly is waiting on completion and approval of the engineering safety note for the assembly stand. The remote clamp is assembled as far as possible without the block structure to mount it to. We still hope to do the first test of plugging the horn into a module with the remote stripline clamp late in December. This provides a few months before scheduled installation to correct any problem found.

IV. Target Carrier and Baffle

Assembly of the target/baffle carrier began in October.

The cooling fins have been mounted on the baffles, and final straightness and sag measurements completed. The baffles are nearly ready to be shipped from IHEP to FNAL.

V. Target Hall Shielding/Cooling

Air Cooling System. The sheet metal contractor will prototype a section of the target pile air block shield in November at Meson detector building.

Steel Shielding. Shielding blocks are being pre-staged from the railhead to a hard stand next to MI-65. Two blocks were modified to fit around already installed piping to the decay pipe cooling system.

Concrete Covers. Delivery of "R" concrete cover shielding blocks will start early December and be completed by March.

Other Remaining Work. The installation cart hitch has been fabricated. The green block lifting tongs have been assembled; a modification was made after an initial test, and the modified tongs have been load tested.

VI. Radioactive component handling

Component-module test stand/positioning system. This test stand is used for assembling horn and target components onto their respective modules and testing hot horn and target handling procedures in MI-8. The stand is now complete and awaiting final safety approval before use with a module. Installation of the lift-table positioning system was also completed during the

month and the system was successfully tested by maneuvering Horn 1 through a full range of vertical, horizontal and angular motions. The milestone date for L-3-212 "Assembly of Horn 1 on Module Complete" is 2/13/04.

Hot cell. Some of the few remaining components of the hot work cell were ordered during October. The pre-assembly of the hot cell structure in the New Muon Lab progressed well during the month. Much of the steelwork for mounting the 12-inch thick end plates was completed and most of the threaded holes needed for rigging these plates were drilled and tapped. The trial assembly will speed up the final installation process by developing rigging procedures in advance, by ensuring that all components fit together correctly and by allowing many of the mounting holes in the concrete blocks to be drilled in advance. Finally, a formal response to questions raised by the MSD design review of the hot work cell were written and submitted at the end of the month.

Cameras. No work on the camera system for remote handling has been done since the physicist involved retired. Work on this system will resume after the remaining vibration test of the target and horn test of the bdot coil with drain installed.

Remaining Design. Design of an installation transport support for the work cell door has been worked out, but drafting has not been done.

VII. Instrumentation/Electronics

Readout testing of Target Hall instrumentation in MI-8 was once again delayed in October due to ACNET personnel involvement with higher priority work for the accelerator shutdown. The MINOS Brazilian collaborators began work during the month on the final engineering design of the cross-hair BLM support system. This system includes the support rods that are used to lower the BLMs through holes in the Target Hall shielding and which also carry the signal and high voltage wiring for the BLMs.

A drain pipe has been successfully welded to a horn field monitor bdot coil feedthrough. This is the proposed fix for bdot readout problems with the two lower coils where water that collects around the feed-through fixtures results in leakage currents. When two complete coils are ready with this modification, it will be tested with pulsing on the horn test stand.

VIII. Installation

Beneficial occupancy of the target hall was obtained, and installation of the target pile zero layer began. The angle irons which form the sides of the zero layer rails were installed and leveled, and the downstream part grouted. This work is on schedule.

IX. Administrative/Project Management

Milestones for the next six months are called out in the above text. Critical tasks are proceeding on schedule. We are on track, but free slack between completing the technical components and their installation-early dates is small, so that we must remain very focused and active in our attempts to prevent slippage.

Physicist, engineering, drafting, and installation team resources are at reasonable levels. An extra engineer has been brought on board to expedite the stripline block effort. A technically driven schedule would call for us to increase our technician force during October and November, which happens to precisely coincide with when most technicians are instead busy with the accelerator shutdown. We will instead maintain our current technician level, which we believe will still allow us to meet our milestones.

Power Supply Systems (WBS 1.1.3) – G. Krafczyk

Overview

All work for the September shutdown is underway and on schedule. This work is mainly cabling work for the power supplies.

Horn Power Supply - K. Bourkland

The voltage dividers, 12 in service plus 3 spares, were removed and modified to reduce their sensitivity to humidity. They have been bench tested to verify the correct division ratio and proper frequency response. We are awaiting delivery of the electrical insulating varnish for moisture proofing of the circuit boards. Once coated and dried, they will be re-installed and the horn power supply system restarted for verification of proper operation.

All of the Nylo-Seal (Nylon) hose in the capacitor bank has been replaced with new current year production material. The new hose is also of increased wall thickness to provide optimum fit with the respective water fittings. This was done as a consequence of finding some fittings developing weeping type leaks (i.e. one drip per minute or two) after twenty-seven months of continuous service at 150 psi water supply pressure. With this change-out the capacitor bank will start service in the beamline position with the best possible chance of withstanding service at 220 psi.

No progress in remote control check-out was completed this month due to accelerator shutdown activities absorbing the necessary manpower and expertise.

Transmission Lines - D. Tinsley

The remote clamp assembly process is almost done. All of the stripline shielding blocks have arrived at MI-8. We are currently doing a quality control check on the blocks. The Shield Block Support Weldment has arrived.

Rafael Silva is doing an engineering note so we can use the weldment. Rafael is working on transporting the bus bars down the shaft, spreader bar. Ceramics for stripline/remote clamp have arrived. Wedge clamps have been machined and are ready to be coated with tungsten disulfide.

The Shielding Block Stripline is in the village machine shop and should be ready for silver plating in 4 weeks.

We have been spending more time getting the transmission lines and shielding blocks assembled at MI-8.

Vladimir Sidorov is designing and making an engineering note on the stripline lifting fixture (for silver plating and other use). Vladimir is also doing design calculations for the target hall stripline.

Extraction Kicker Power Supply - C. Jensen

The G-10 coil form was received in the last month. At this point ALL parts are on hand to start construction of the PFN after the shout down that is scheduled to be over in about the middle of November.

Conventional Power Supplies - S. Hays

Shutdown work continues. Testing of the HV101 loop will follow. Power supply tests have continued with the 3Q120 magnet.

Decay Region & Hadron Absorber (WBS 1.1.4) – C. James

All the core modules and the core carrier returned from fabrication, and are now ready for installation. Design work on the change to the core water-cooling piping layout has begun. Design work on the sliding steel "door" over the downstream Hadron Monitor access slot was completed. The Absorber Installation task manager is searching for the necessary parts from on-site surplus materials, and expects to fulfill most of the parts list in this way. Tyvek has been proposed as a material for air-sealing the absorber pile after it is fully installed (for retardation of air flow, not for air-tightness), and the radiation hardness of the material is being researched.

The Project rejected a fall-protection system in the Absorber enclosure that involved placing anchors in the ceiling, due to the chances of creating water leaks. Two alternative methods for fall-protection have been proposed and are being pursued.

The two decay end-caps were vacuum-tested together, being joined by a very short piece of 6 ft diameter pipe. This test was part of a testing, handling and installation plan for the end-caps submitted for review within the Project. No problems with the end-caps were found during the test.

Neutrino Beam Monitoring (WBS 1.1.5) – D. Harris, S. Kopp

The fabrication of the muon monitor support structures at University of Wisconsin-Madison is almost complete: one structure was built and then used as a jig, so that parts for the other two structures can be built to fit on the same first structure. This way all three stands have interchangeable parts. The stands will be complete well before we get beneficial occupancy of the downstream portion of the NuMI underground complex.

Testing and calibration of the muon monitors continued this month at the University of Texas at Austin. A total of 25 of the 32 detectors constructed (which include 5 spares) are now tested. Two tubes fail tests and require minor (1 day) repair. The spread in relative response between chambers is still at the level of 3%, and the precision of this calibration is <1%. Of the 9x25 (225) chambers tested in total, four chambers (or 2% of them) were found to be "dead", indicating an improper solder joint.

Survey, Alignment & Geodesy (WBS 1.1.6) – W. Smart

Survey tasks for the installation of the NuMI proton beam during the current accelerator shutdown continued to proceed well. Initial ("rough") alignment of the upstream "extraction area" magnets was completed, except for HQ 103 which requires stand modification. The Main Injector magnet (614-1), which had been removed to allow heavy equipment access to the NuMI stub area, was re-aligned after it was put back in position. Measurements were made on the surface, in the tunnels, and through sight risers that will be used to verify the tie-in between the NuMI and the Main Injector tunnel alignment networks. Seven proton beam magnets were referenced this month.

The survey engineer effort for NuMI in October was 4.6 mw, with 3.8 mw used for proton beam magnet "rough" alignment and network tie-in measurements; and 0.8 mw for proton beam magnet referencing.

Beamline Utilities (WBS 1.1.7) –D. Pushka

General

Activities presently underway for WBS 1.1.7 include: continuing to receive and install instrumentation on the skid assemblies, completing piping installation drawings for the absorber access tunnel and MINOS areas, and starting electrical hook ups.

As reported in previous months, changes to the sump pump and cooling systems to be installed as part of the SB&O civil construction contract were reviewed. These changes (known as revision 6) affected the design of the Absorber RAW, Decay Pipe RAW and MINOS LCW systems. Changes shown on Revision 6 initially did not meet the needs of the MINOS D.S. RAW system. Therefore, changes to the SB&O system have been requested and made by the SB&O construction office. Revisions to the previously completed engineering notes were on hold pending resolution of these changes as was the peer review of these engineering notes. These changes have now been mostly resolved, the engineering notes updated, and the engineering notes for the RAW systems sent for peer review.

Ross Doyle (BD/Mechanical) has prepared the purchase requisition for the instrumentation for all systems. Level, temperature, pressure and conductivity sensors have all been requisitioned and orders placed. Many instruments have been delivered and installation has started, but not completed. Little instrumentation was installed in September 2003 because of shutdown activities as Ross was busy with the MI-31 shielding installation. October has allowed Ross time to feed instrumentation to John Cornell at New Muon Laboratory for installation on the skids. Instrumentation has not yet been installed in MI-62 because the technicians are busy with the accelerator shutdown.

Paul Kasley of Beams Division Controls Department did not work on programming the programmable logic controllers (PLC) used on the NuMI Water systems and the connection to the ACNET front end because of shutdown activities.

A requisition for the time and materials electrician sub-contractor to wire the pump motors to the motor starters has been initiated. Work, however, has not yet occurred because the T&M electricians are busy with shutdown work.

Upstream LCW System

The T&M mechanical contractor, SEA Mechanical, has completed in October the installation of the LCW piping in the area which the 30 foot long shield wall previously occupied. They have also tied into the piping installed by IPS under the SB&O contract at the downstream end of the NuMI Stub. Visual inspection of the welds completed by SEA show that these welds are less uniform that those installed by the other contactors. Radiographic inspections occurred in October 2003. Results indicated that 3 of 4 radiographed welds did not meet the code. After meeting with the T&M office staff, it was learned that there is not a technical specification included in the contract with the T&M mechanical contractor. Therefore, the Laboratory had little recourse to compel the T&M contractor to repair their poor quality work. This differs from fixed price contracts where the technical specification requires the contractor to repair at his cost, any welds found not to meet the governing code. The industry standard is to hold contractors responsible for repairing any defective welds. To correct this deficiency in our contract language, a section of the technical specifications written for the fixed price piping contracts was copied and edited to apply to T&M contracts. The T&M office staff, together with the contracts administrator, will initiate contract modifications to the existing T&M contract to incorporate these changes.

Repairs of the defective piping welds have not been started yet. The 4-inch pipe between MI-62 and the 6 inch pipe installed in December 2000 which was installed before NuMI reached CD-1, was radiographically inspected in December 2000 and found to have a significant number of defective welds. Because of the problems with these portions of the work, a director's exemption will be required for this piping system.

Work on installing instrumentation on the system in MI-62, which does not require a shutdown, is postponed until after the shutdown is over. Technicians should be available after the shutdown; Ross Doyle will supervise installation.

Final Horn Raw System

Work to weld the piping for the Horn 1 and Horn 2 skids is completed. The next activity will be to install the instrumentation and motor starters as mentioned above. Piping for this system installed as part of the SB&O contract is complete.

The engineering note for this system was peer reviewed nearly a year ago. However, recent sizing checks for the ejector pumps indicate that the motive water needed to meet the design conditions will be larger than what is available from the installed circulation pumps. This is due to the restrictions now apparent in the module design. More careful analysis was performed in October to quantify the magnitude of the problem. The solution was to order replacement impellers for these pumps to get the required flow and head.

Upstream RAW System

Work to weld the piping for the upstream RAW skid is completed. The next activity will be to install the instrumentation and motor starters as mentioned above. Piping for this system installed as part of the SB&O contract is complete.

Downstream RAW System

Piping routing drawings for the piping between the absorber and the absorber RAW skid have been finished. These drawings, together with a specification, will be used for the installation of this piping, post beneficial occupancy of the MINOS area.

A need to generate a cost neutral CR to revise the number of RAW pipes between the absorber shielding and the absorber RAW skid has been identified. This CR has been initiated with the project office staff, although it is not complete.

The pumps skids for the absorber RAW and absorber Intermediate systems have been assembled, and all pipe welding completed. Instrumentation is being installed.

Now that the proposed changes to the SB&O installed sump pump and cooling systems have been adopted, a re-design of the absorber intermediate system and the downstream portion of the decay pipe cooling system has been made. Flow calculations for the engineering note have been completed for the Absorber RAW and Intermediate Systems and have been revised to account for the changes due to revision 6 of the SB&O drawings. Existing pumps have been shown to still work, although they provide excessive head. Modifications to the pump impellers may be made after initial operation to reduce the excessive head and improve electrical efficiency.

In summary, on the Downstream (Absorber and Decay Pipe) RAW Systems, the mechanical design is complete and has been submitted for peer review.

Vacuum Decay Pipe Cooling

Piping routing drawings for the piping between the downstream end of the Decay Pipe and the downstream and the upstream Decay Pipe RAW systems were prepared, checked and signed off. This piping is included in the SB&O civil outfitting contract and installation of this piping has been completed.

Meanwhile, the Decay Pipe cooling system skids are assembled and piping has been brazed.

Status of the engineering note and equipment for the Vacuum Decay Pipe Cooling system is identical to that of the absorber RAW system. Specifically, major equipment has been sized, ordered, received, and installed. The engineering note had been completed for the pre-revision 6 design, and revised for the new design. The peer review has been initiated.

Extraction and Primary Beam Vacuum System

Jim Klen (BD/MSD) has been assigned to re-evaluate the vacuum design for the primary beam transport beam pipe and has written an engineering note. The note has yet to be subject to a peer review.

Meanwhile a layout of the vacuum system for the pre-target area (complete with the material take-off lists) has been completed by Vic Madjanski (PPD/MD) with guidance from Mayling Wong (PPD/MD) and Jim Klen. A similar drawing for the portion of the beamline in the NuMI stub was started by Gary Trotter (PPD/MD) (also with guidance from Jim and Mayling). Last month, it was reported that a similar drawing for the extraction channel awaits attention from Tim Hamerla (BD/MSD). Because of difficulties experienced with the extraction channel stands, Tim is not able to attend to this work. Therefore, Gary Trotter has been asked to increase his scope of work and extend his responsibility to the extraction area.

Most of the long lead time ion vacuum pumps have been ordered and most have been received. However, many of the vacuum beam pipe spools, flanges, and clamps have not yet been ordered.

Decay Pipe Vacuum System

The Piping and Instrumentation Diagram is complete, the instrument list generated, and the vacuum pump has been received. An oil containment skid has been designed, material ordered, but fabrication not started yet.

Layout of the vacuum pump-out line in the absorber cavern and labyrinth has been completed. This drawing, together with a specification, will be used for the installation of this piping, post beneficial occupancy of the MINOS area.

Gas Systems

The WBS 1.1.7 system manager has been instructed to generate a CR to add the upstream (beamline) gas system back into the scope of the 1.1.7 project. Information for the CR has gone to the project office and awaits action by the project office staff.

Controls, Interlocks and Cable Installation (WBS 1.1.8) – R. Ducar

October was again near totally consumed with installation activities during the accelerator shutdown. Work has continued to be relatively efficient with excellent cooperation from those managing and effecting work on the Recycler in areas of common activity. Tray has been installed for the conductors of the V108 circuit in the NuMI stub area thus completing all planned installation of tray in the Main Injector enclosure. Five additional circuits of 8 x 500 MCM conductors were placed and terminated for the V108 circuit. Nearly all of the other 1/0 and 500 MCM cables for dipole and quadrupole magnets have also been terminated and landed.

Additional cable pulls completed in Main Injector included those for interlocks, magnet klaxon trunks, beam position detectors, profile monitor signal, and selected high voltage cables for loss monitors and profile monitors.

All of the installed magnets of the Main Injector portion of the NuMI beamline have been field characterized and high potted. Spare magnets in the A150 crossover section of the enclosure have also been so checked.

Interlock cable and hardware installations were completed and tested for the gate and door at the upstream and downstream ends of the RCP region of the Carrier Tunnel. This area and the whole of the NuMI Stub are now inclusive parts of the Main Injector Radiation Safety System where no access is allowed during MI operations. The RCP region of the Carrier Tunnel (Upper Hobbit) can be "controlled" accessed during times of MI access. This will obviate the need for the search and secure of the region at the conclusion of supervised access of the MI.

13.8 kV high voltage conductors were installed at MI-62 between the S&C high voltage switch and the disconnect and vacuum circuit breaker for the exterior V108 circuit transformer. The motor control center (MCC) for LCW and pond water pumps was delivered to MI-62. Plans are being made to connect this MCC to building power before the end of the shutdown.

Ragnar-Benson completed the installation of technical cables in the MI-65 shaft, Pre-Target, and downstream Carrier Tunnel areas. With the beneficial occupancy of MI-65 in October, some WBS installation 1.1.8 work has begun. Initial installation of telephones has commenced. More than half of the new seven foot equipment racks have been delivered. They are being staged in the upstairs Electronics Room and the Target Hall Power Supply Support Room. Work in this new area will advance as manpower becomes more readily available after the shutdown ends.

Milestones for 1.1.8 continue to be reviewed with a resulting assessment that completion dates are reasonable.

CIVIL CONSTRUCTION AT FERMILAB (WBS 1.2) – D. Bogert

Overview

During October Ragnar Benson continued work in the MINOS area and completed the MI-65 (target) area for beneficial occupancy of that area on October 20th for the Service Buildings and Outfitting contract. There were approximately 172 punch list items at beneficial occupancy, but the area was ready for the immediate commencement of installation activities. At the end of October, the contract was approximately 84% complete, including work added to the contract by supplemental agreement. There was one recordable safety incident during the month of October. On October 31st, an electrician suffered a sprained shoulder while installing conduit sections from a lift basket. During October Ragnar Benson concentrated on tasks associated with the completion of the Target Area (the MI-65 Service Building including the underground facility from the end of the carrier tunnel to the downstream end of the Target Hall), up to the beneficial occupancy on October 20th. After beneficial occupancy, staff was once again concentrated at the MINOS area. As reported last month the MINOS occupancy was extended 43 calendar days to January 31st 2004. The extension reflected the time impact of scope additions to the contract. Ragnar Benson and their electrical subcontractor agreed that it would only be possible to make the MINOS milestone by the new date with the addition of significant effort. During the month of October the regular workweek of the electrical subcontractor was continued at 60 hours with the agreement of the workforce, and a second shift was also added for the first two weeks of October. It is recognized that during utility installation in the MINOS shaft two shifts will also

be required. The additional effort during October at the Target Area permitted the achievement of the beneficial occupancy on time on October 20th, but until that date a "zero-sum game" (effort was redirected from MINOS to Target) increased the associated schedule variance at the MINOS Area by $260K. The extension of the MINOS occupancy to January 31, 2004 reduced the schedule variance at MINOS by about $1050K, but at the end of October the schedule variance at the MINOS area (the remainder of the contract) stood at $814K. It will still be necessary for Ragnar Benson and subcontractors to either increase effort or work multiple shifts (or both) to remove the remaining schedule variance at MINOS and complete the work by January 31st. Ragnar Benson has said this will be done, and NuMI Project Management expects the MINOS Area beneficial occupancy on January 31.

The Fermilab Accelerator Shutdown continued in October, and all tasks that had awaited the shutdown were completed. Other tasks completed at the MI-65 Service building for beneficial occupancy included wire and cable pulling, painting, HVAC turn on and testing, fire alarm installation and testing, final hardstand installation, and exterior lighting. The MINOS Area roads were paved, and the MINOS building high bay slab was poured. Piping and HVAC duct installation at the MINOS building continued. The MINOS Hall crane was delivered into the MINOS Hall and installation on the rails began. A relatively modest amount of below grade piping and electrical installation was accomplished in the MINOS Area, reflecting the redirection of effort to the Target Area.

Laboratory staff continued to monitor weekly progress using the Ragnar Benson schedule for performance of the contract work. During October beneficial occupancy was on time at Target but the schedule variance again deteriorated at MINOS as measured against the approved "original" project schedule that contains 340 work elements. At the end of October, 305 work elements had been started, and 261 of those were completed. Six work elements were not started after their respective "late start" dates and an additional twenty-eight elements underway were late with respect to "late finish." This reflects the situation after the rescheduling of the work at MINOS to include the additional 43 calendar days to be added by agreement. This is a substantial reduction of the number of "late starts" and "late finishes" compared to those reported in September and is a direct result of the rescheduling. The DOE milestones are not threatened. For the purposes of forecast this month Project Management estimates that the required increased effort (overtime and/or staffing) will continue to be provided and that contract completion (MINOS area) will be on January 31st, the recently extended date.

The claims and contract closeout issues for the S. A. Healy contract again are discussed at length in the procurement portion of this monthly report. The Disputes Resolution Board did deliver the sixth recommendation to the parties during October (thirteen months after the hearing in September 2002). A meeting of all three parties was held as scheduled in October. Additional discussions between Fermilab and S. A. Healy did not lead to a global resolution of the outstanding issues. A seventh DRB hearing (on the Decay Tunnel) was scheduled for November.

Surface Buildings and Outfitting – E. McCluskey

At the Target Site, RBI completed all work to achieve Beneficial Occupancy status on October 20, 2003. This included: wire and cable pulling in all areas of the building, painting continued work on the desiccant mechanical units, fire alarm wiring and devices, final hardstand

installation and other site items, installation of exterior light fixtures, bollard installation and painting. Electricians continued on a second shift early in the month, in addition to regular Saturday shifts.

Below-grade at Target to achieve Beneficial Occupancy included: wire pulling, fire alarm wiring and device installation, powering of lighting fixtures, completion of rock removal on the east Target Hall Walkway, and installation of duplex sump pumps. Work continuing, but not required for the B.O.: controls, fire alarm, and power wiring installation continued in the Decay Walkway.

At the MINOS Site on the surface, underslab utility installation continued. Stoop and driveway apron concrete was placed. The asphalt drive into the site was installed. Mechanical equipment, ductwork, and piping continued inside the building. Installation of site electrical lighting began. The holding tank was delivered and placed in its excavation. The chiller was relocated from MI-60 to outside the building. The two elevators were brought back into service. Electrical cable pulling began at the utility pad, with the intention of completing the permanent power tie in early November. The majority of the siding was completed. Roofing was installed. Window frames and some glazing were installed.

Below-grade at MINOS, GW and LCW piping installation was essentially completed on top of the passageway in the MINOS Passageway and Hall and under the Detector Platform. Electricians continued installation of utility supports and conduit at the west side of the MINOS Tunnel and wireway under the Detector Platform. Little additional electrical work was completed in the tunnel due to concentration of forces at the Target site until after October 20th, when crews began working in all areas of the tunnel. Concrete pads for mechanical equipment were completed at the upstream end of the Absorber Access Tunnel. The MINOS Hall bridge crane was installed. Sump discharge piping fabrication began at the base of the shaft. Some drip pans were installed in leaky tunnel locations.

MS7 was achieved on time on October 20, 2003.

One recordable, restricted duty case incident occurred on October 31, 2003, involving an electrician working off a lift. An unsecured conduit began to fall. The worker tried to stop it and strained his shoulder. See the ES&H report for more information.

RBI and CMO reached consensus on revision 11 pricing and schedule extension. The CMO and its consultant engineers administered the beneficial occupancy procedure for the Target area, creating the punchlist for this scope of work. Numerous RFI responses were generated.

Change orders to the SBO subcontract were processed, but no supplemental agreements issued in October. The effect of the revision 11 changes will be documented in the November report with the appropriate supplemental agreement issuance.

The CMO requested proposals from RBI for the following:
Additional hardstand parking at MINOS Site.
Removal of the temporary pole and power line at the MINOS Site.

Site tours for NuMI project installation and FESS services and operations personnel continued as required.

MINOS DETECTORS (WBS 2.0) – R. Rameika

Overview

In October the Caldet run at CERN was completed and steady progress continued on the Near Detector electronics and rack preparation. The Far Detector continued to operate with up times averaging 80%, while at the same time training of the minecrew staff for routine operation continued.

Some examples of statistics for the production status at the end of the month are given below. (Production items that have been listed as 100% complete in prior months are not shown here.)

WBS	Near Detector Production Items	%Complete
2.2	Near MUX boxes complete and delivered to FNAL	98%
2.3	Near Electronics production MENU boards checked out	99%
2.5	Near Detector Electronics Rack assembly	68%
2.5	Near Detector Planes installed	0%

Electronics and Data Acquisition (WBS 2.3) – G. Pearce, P. Shanahan

Overview

The beam running of the Calibration Detector (CALDET) at CERN finished in October. This concludes a significant effort on the part of the Data Acquisition, Detector Control, and Electronics groups in WBS 2.3. This effort has provided extremely useful feedback, which is expected to have a significant positive impact on the Near Detector installation, commissioning, and operation.

Assembly of Near Detector Front End Electronics neared completion with the delivery of the remaining Front End Daughter boards (MENUs). The only items for which assembly has not been completed are the Front End Mother boards (MINDERs), which are 97% complete, "Type 4/5" Photomultiplier-to-Minder cables, which will be assembled starting in November, and the VME Timing Modules (VTMs). Only 13 of the latter are required, which allows their production schedule to accommodate lessons from the CALDET run to be incorporated into the final version. The mechanical defect of the Front End crates remains a problem. Fixes not involving the assembly contractor are under consideration. Checkout on all system components is approximately 65% complete.

The effort on Data Acquisition (DAQ) in October included a workshop focused on improving routine operation of the Far Detector. Key members of the DAQ group will visit the Far Detector site in November, to implement the improvements, and to train the Soudan shift crew in the changes. Preparations for the Near Detector installation at Fermilab proceeded with the ordering of all needed DAQ PCs, with expected delivery in December.

All components for the Near Detector Rack Protection System (RPS) have been ordered, and continue to arrive at Fermilab.

Near Detector Front End Electronics (WBS 2.3.1) - G. Drake

The assembly of MENUs is now complete. 10,300 MENUs were assembled, with ~40 cards unusable due to board warpage or other damage from assembly. Approximately 10,170 have been checked out and declared good. Approximately 90 cards remain to be made to work, due to having subtle problems. Work continues on these cards at Fermilab. There are currently enough cards for the experiment, and the work remaining would be to ensure that there are enough spares for the life of the experiment.

The assembly of MASTERs is complete. Checkout continues at Argonne. The checkout of the 90 modules is approximately 70% complete. The assembly and checkout of the KEEPERs have been completed. The assembly of MINDERs is nearly complete. The last 20 boards are due in early November. Checkout continues at Argonne. We currently have successfully checked out 375 boards, or ~60% of the total. The assembly and checkout of clock components for the near detector have been completed.

The full quantity of MINDER Crates from production has been received at Argonne. Unfortunately, the crates still have a mechanical problem. The integrity of the crate is such that cards can slip out of the card guides in the process of plugging cards into the crate, but only in the middle slots. Schroff has admitted that they failed to fabricate the crate correctly. We are engaged in discussions with them to see how to resolve the problem. We are also working on solutions that we would implement in-house. A plan will be determined in early November, at which time repairs will begin. We hope to have the problem resolved by December.

The fabrication of the Type 2/3 PMT cable sets and the Type 1 PMT cable sets are complete. We have received bids for the assembly of the Type 4/5 cables, and this will begin in early November. The prototype PIN Diode AUX Card has been tested at CALDET. It appears to have worked satisfactorily. We are waiting for further analysis of CALDET data before proceeding with the fabrication and assembly of the cards needed for the near detector. We expect that the production will begin in November.

Results from CALDET show that the system there exhibited occasional errors in the data, as evidenced by the setting of error bits on the data words. The rate of errors was relatively rare, approximately 5 per hour of running. We are investigating this at Argonne. Recent measurements suggest that the termination of the clock line in the VME crates may be marginal. Studies will continue into November to confirm a solution.

Data Acquisition (WBW 2.3.4) – G. F. Pearce

A mini DAQ workshop was held in Cambridge during October to review and work on the improvements required to the Far Detector system for routine operations. During this and a follow up meeting at RAL, the majority of the work planned was completed and tested successfully. To permit adequate training of the Soudan crew with these modifications before they are introduced, it was decided to defer full operational implementation at Soudan until

November. Two members of the DAQ group will be at Soudan for maintenance work on the operating systems at that time and will be able to provide on site training.

Purchase of DAQ equipment for the Near Detector (ND) has proceeded on schedule. All the DAQ PCs have been ordered, with final delivery to Fermilab expected in December. Accurate lengths for the optical readout fibers have been determined in consultation with the Fermilab installation group and an order will now be placed. A fraction of the ND DAQ equipment is 'on loan' at the Calibration Detector at CERN and will need to be returned to Fermilab in time for the ND installation.

A firm date for dismantling the detector at CERN is under discussion and needs to be agreed soon. The ND test beam runs on the Calibration Detector at CERN were completed this month. The detector continues to operate, taking cosmic ray data.

A full DAQ workshop has been organized and will be held at RAL on December 8-10. The primary focus of this meeting will be on planning and preparations for the Near Detector DAQ installation.

Detector Control and Monitoring (WBS 2.3.8) – A. Habig

Software: The DCS SQL DB optimization continued, and the status webpage updates minutely as a result.

Environmental Monitoring: The 1-2 degree temperature fluctuations recorded by the Far Detector sensors has been found to be pickup noise from the fluorescent lights. The real temperature is much more stable. Wes Smart and Dave Boehnlein have been investigating ways to eliminate this noise.

Near Detector Installation (WBS 2.5) - C. James, J. Thron

In the New Muon Lab, the assembly of the near detector readout racks is continuing. The Minder rack heat exchangers have arrived, are installed, and the work of plumbing them in is underway. Additionally the Master rack airflow sensors were installed and all the power supplies had power cords and AC fuses made and attached. The RPS components continue to be delivered at a steady rate.

The parts for the first Minder fan trays were sent to the University of Pittsburgh for assembly and they have sent the first completed unit back; it is being tested before they produce the rest. The FNAL technicians are producing the 'tube socks' which will be needed for the light tight connection of the fiber cables to the scintillator modules. There was a preliminary safety inspection of the Minder and Master power harnesses which allowed the Minder harness assembly order to proceed. There have been a series of meetings with the FNAL Computing Department to define the LAN for the near hall. A plan has been agreed to, which includes optical isolation for the Minder racks to help prevent noise. There were meetings to decide on the arrangements for grounding the electronics racks: both with the electronics engineer who designed the readout and with the floor manager who will oversee the installation. A flexible method was developed to be able to deal with various scenarios. Planning began for hooking up

a few racks to the stored scintillator planes. This will allow people to get familiar with the system in preparation for beneficial occupancy.

VI. ES&H HIGHLIGHTS – M. Andrews

Management Overview – M. Andrews

Mike Andrews continued to provide ES&H support to the Service Building & Outfitting Construction Management Offices (NCMO) to augment the civil construction oversight effort. His efforts include reviewing the implementation of the subcontractor's safety program, concurring with the subcontractor on where improvements are needed and the priority for those improvements, attending pre-shift subcontractor safety meetings to verify continuing improvement, and participating in weekly ES&H Inspections with the sub-contractor and representatives from the DOE Fermi Area Office.

The NuMI Project and Ragnar Benson project management teams meet on a weekly basis to discuss work planning issues, hazard analysis review, training issues, general ES&H program issues, and day-to-day scheduling issues through a series of regularly scheduled meetings.

Mike is also providing ES&H support for the Installation phase of the project. At present, he chairs a weekly ES&H meeting with NuMI/MINOS Project Management to discuss issues relating to the upcoming installation and operational phases. In addition the project has added a Field Safety Coordinator (John Cassidy) to supplement the ESH support effort.

NuMI Beam Safety Issues – M. Andrews

The NuMI Project ES&H Coordinator (Mike Andrews) and the NuMI ESH/QA Committee Chair (Keith Schuh) meet on a weekly basis to discuss and coordinate the process for completing upcoming equipment reviews by the committee. They also discuss the status of reviews that are in progress.

The committee is presently reviewing Engineering Notes for the Decay Pipe Vacuum Vessel and the NuMI Horn Raw System. The committee has completed and signed off reviews for the MI-62 Heat Exchanger Stand, Green Block Lifting Fixture, T-Block Lifting Fixture, NuMI Module Lifting Fixture, Upstream Vacuum Decay Pipe Fixture, NuMI Pre-Target Magnet Stand, NuMI Horn Module Assembly/Test Stand, Green/Blue Block Lifting Fixture, NuMI Horn Lifting Fixture, and NuMI Horn 1&2 Target Baffle Assembly Stand.

Regular weekly meetings continue to occur between the NuMI Project ES&H personnel and the MI-65 and MINOS Floor Managers to coordinate upcoming ES&H requirements including daily work planning meetings and Hazard Analysis for installation tasks.

Weekly Installation Meetings continue to occur between NuMI Project ES&H personnel, Floor Managers and L2/L3 Managers. The topics discussed include installation procedures, hazard analysis, equipment ESH/QA reviews and upcoming schedule issues.

Also a daily meeting is held between the MI-65 Floor Managers, the NuMI Project ES&H Coordinator, and the Field Safety Coordinator to discuss installation activities for the day, upcoming activities, hazards analysis, installation procedures and ESH/QA review status.

Installation Safety – M. Andrews

NuMI Project Management, FNAL ES&H Section, and DOE performed multiple ES&H reviews and audits during the month of October. NuMI Project Management conducted ES&H Inspections on October 23rd and 30th, 2003. Results of the inspection were communicated to the MI-65 Floor Managers at the closeout meeting held immediately following the inspection.

MI-65 Floor Managers are holding daily work planning meetings with all site workers, which include a review of task hazards. T&M subcontractor personnel are holding weekly toolbox meetings. NuMI Project Management monitors these meetings on a regular basis.

Task Managers are developing task related HAs and submitting Hazard Analysis documentation for review and acceptance to the NuMI Field Safety Coordinator for all new tasks.

There were no OSHA-recordable injuries during the month of October 2003.

Construction Safety – M. Andrews

NuMI Project Management, FNAL ES&H Section, and DOE performed multiple ES&H reviews and audits during the month of October. NuMI Project Management developed and distributed a report for ES&H Inspections conducted on October 2nd, 9th, 16th, 23rd and 30th, 2003. Safety Findings/Deficiencies were transmitted to the Subcontractor through the NuMI Construction Management Office. A follow-up on each finding was conducted during the Weekly ES&H Inspections and in the Weekly Construction Management Meetings with Ragnar Benson Management in order to track and/or close each item.

RBI continues to hold their daily huddles, which include a review of task hazards, and their weekly toolbox meetings. RBI also held their monthly safety meeting for all site personnel. NuMI Project personnel continue to monitor these meetings on a regular basis.

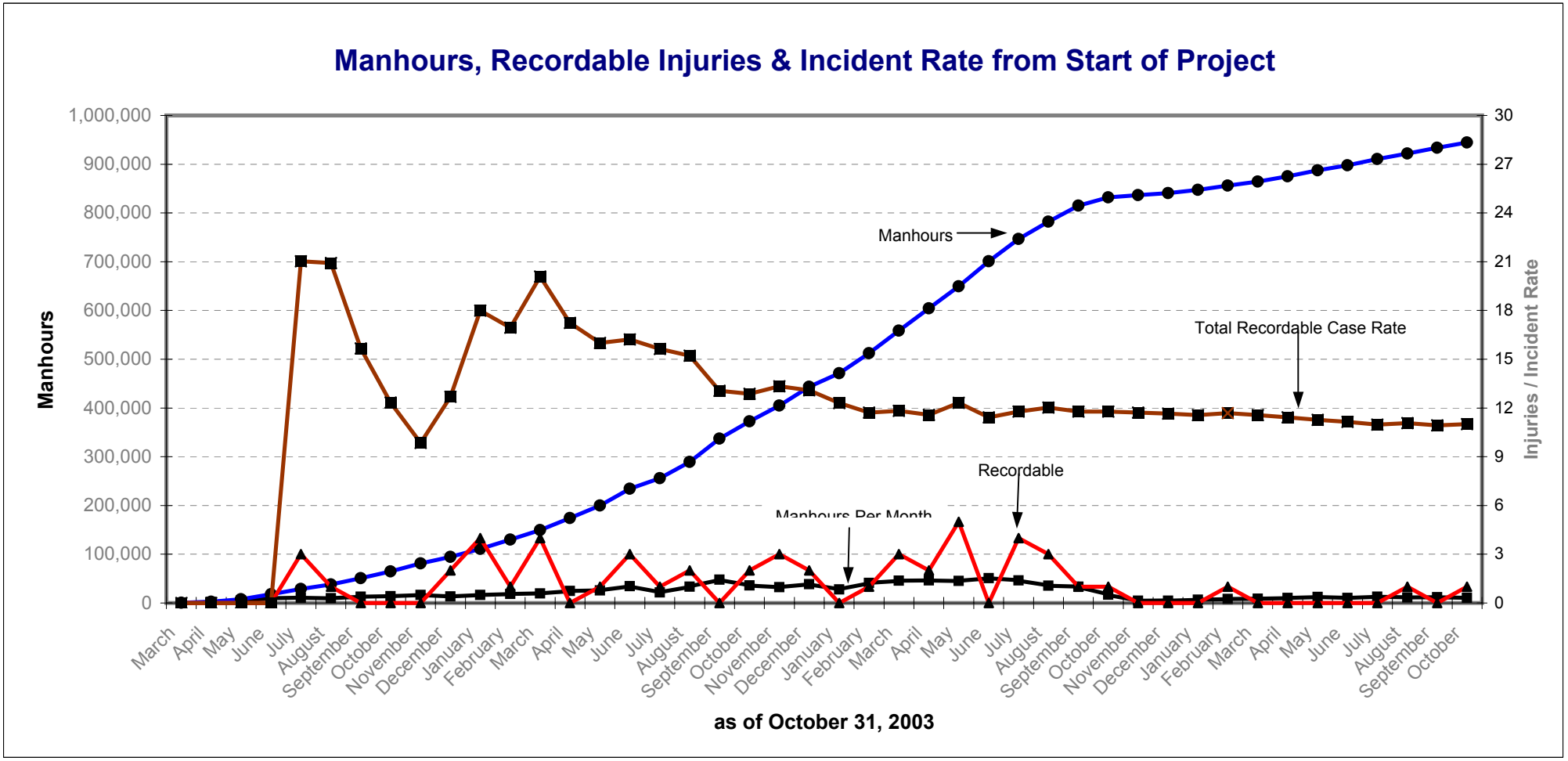
RBI continues to submit Hazard Analyses for review and acceptance to the SBO-CMO for all new tasks. RBI has generated in excess of one hundred and twenty-five hazard analyses for tasks being completed by subcontractor personnel.

There was one OSHA-recordable injury during the month of October 2003.

A sub-tier electrician was installing a 3 inch section of conduit into a junction box. While screwing the conduit, by hand, into the junction box, the conduit became unstable and started to slide on the support. The electrician reached to control the conduit and felt pain in his left shoulder. The employee was sent to the doctor where he was diagnosed with a strained left shoulder and placed on restricted duty with a 20 pound lifting restriction.

Also during the month of October RBI and their subcontractors surpassed 70 consecutive days without an OSHA-recordable injury.

Safety Performance for the NuMI Construction Project for 2003 Calendar Year to Date includes a Recordable Incident Rate of 5.8**,** a Lost Time Incident Rate of 1.9, and a Lost Workday Incident Rate of 3.8. The Project to Date Safety Performance includes a Recordable Incident Rate of 11.0, a Lost Time Incident Rate of 2.5, and a Lost Workday Incident Rate of 7.2. Figure 2 shows man-hours worked, and recordable injury and incident rates from the start of the NuMI construction subcontracts through October 2003.


Manhours, Recordable Injuries & Incident Rate from Start of Project
Manhours
Injuries / Incident Rate
1,000,000
900,000
800,000
700,000
600,000
500,000
400,000
300,000
200,000
100,000
0
30
27
24
21
18
15
12
9
6
3
0
Manhours
Total Recordable Case Rate
Recordable
Manhours Per Month
March April May June July August September October November December January February March April May June July August September October November December January February March April May June July August September October November December January February March April May June July August September October
as of October 31, 2003

Environmental Issues – M. Andrews

Discharge results to be reported to the IEPA for October are as follows:

MINOS Outfall 004
TSS Ave. 2 mg/l
pH 7.59

Target Outfall 006
TSS Ave. NA
pH NA

RBI completed paving of the MINOS Rd. into the site. Vegetation over all seeded areas at MI-65 and MINOS sites is progressing well.

RBI was directed to begin silt fence removal at MINOS along south and east site boundaries.

FESS Operations continued 24 hr. operation of MINOS sump water pumping into FNAL ICW. The temporary pumping system operated throughout month without incident.

Ongoing erosion control findings:
RBI continued to make a good effort in resolving environmental findings throughout the month.

MINOS Safety – D. Boehnlein

Curt Lerol has been appointed the new safety officer for the Soudan Underground Lab. Curt was one of the crew leaders during the far detector construction and had a background in safety in the mining industry before that. Jerry Meier retains the role of Radiation Safety Officer. Since the module mapping table was disassembled this summer, MINOS has no radioactive sources at Soudan, although the CDMS experiment has several calibration sources.

Radiation Safety – N. Grossman

Comments from the ES&H Section on the final methodology document "Residual Activation and Prompt Radiation Methodology Using MARS" have been addressed; approval is imminent. The document "Airborne Activation due to the Operation of the NuMI Beamline" has been updated and is awaiting updated MARS numbers. A Shielding Assessment/SAD meeting was held discussing the status of these two documents. No major issues were raised. Writing assignments were given to people for sections of the NuMI Safety Assessment Documentation (SAD).

VII. LEVEL 3 MILESTONES(Sep)

The current NuMI/MINOS Level 3 Milestones are shown in Figure 3. Milestones for the period 8/03 to 9/05 are shown. The triangles are the fixed Fermilab milestones. Note that we show L3 milestones along with the new "L-3-n" identifiers. Actual dates of achieving milestones are shown as black diamonds. Currently projected dates for achieving milestones are shown as

hollow diamonds. Projected milestone dates which differ from the fixed Fermilab milestone dates by more than two weeks are flagged as **<Late>** or **<Early>**.

VIII. VARIANCE ANALYSIS – G. Bock

Variances are reported in the cost and schedule reports against the NuMI Project's plan, which is considerably more aggressive than that required by the DOE milestones. In all cases the project remains comfortably ahead of schedule with respect to the DOE milestones and within baseline cost.

We include the Variance Summary Table. Cost and schedule variances against the project's plan are extracted from the Cost Tables in Section IX and shown here at Level 2.

DOE MILESTONES

There are no significant changes in the forecast dates for any of the remaining DOE milestones. Milestone forecast dates for all remaining DOE milestones continue to include comfortable amounts of float.

NuMI (WBS 1.1)

The Technical Components report a negative variance of ($1,028K) this month, an unfavorable increase of about $750K since last month. Of that increase about $550K is real, the remaining $200K is not and is due to underreported progress. There were labor overruns resulting from an underestimate of the oversight needs during the installation in the Main Injector and concurrent start of activities in MI-65. There were also costs for unbudgeted training of T&M crews and some 'standing army' effects during the complicated October activities. The shutdown is now completed and the MI-65 activities are running smoothly, although some overruns will continue into the early parts of November. Project management is preparing a detailed analysis for presentation to the PMG in December. We believe the cost overruns are within our estimate of contingency usage for the Technical Components. The favorable schedule variance continues ($845K).

NuMI (WBS 1.2)

Schedule variance: As forecast last month, the extension of the MINOS occupancy date to January 31, 2004 reduced the schedule variance at MINOS by about $1000K, but it will still be necessary for Ragnar Benson and subcontractors to either increase effort or work multiple shifts (or both) to remove the remaining real schedule variance at MINOS (about $800K) and complete the work by January 31. Ragnar Benson has said this will be done, and NuMI Project Management expects the MINOS Area on January 31. Overall, project management remains pleased with the performance of this contract although we continue to monitor the progress closely.

Cost variance: There is no significant cost variance in WBS 1.2. A negative variance arising principally from an accrual against potential future claim settlements from work on the Tunnels and Halls project is counterbalanced now by a positive variance on Title III. Costs for the Service Buildings and Outfitting contract remain comfortably on the plan.

NuMI (WBS 1.3)

Cost variance: There is a favorable cost variance of $708K.

MINOS (WBS 2)

Cost and Schedule variances: Almost $700K of the large favorable cost variance shown for the MINOS Detector is real. Work continues on closing out the contracts relating to far detector construction. Careful attention continues to be paid each month to the situation. There continue to be no real, significant schedule variances in WBS 2.0.

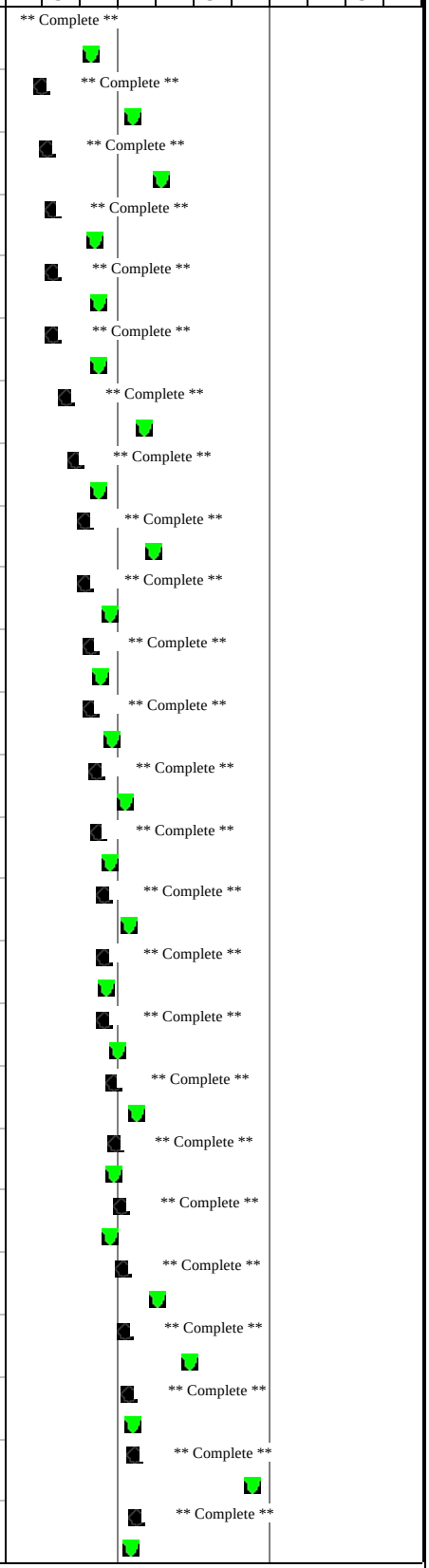
MINOS Cavern and Project Support (WBS 3)

The MINOS Cavern outfitting is complete. There is a small positive cost variance in WBS 3 which remains after the completion of MINOS project work in Soudan. There are no significant variances in WBS 3.

NuMI WBS Level 3 Milestones
(7/2003 - 9/2005)

11/24/03

Mlstn#	WBS Lev	Name	FNAL Cur Forecast	FNAL Base Date	Float
L-3-135	111	Operational Beam Permit Prototype	9/30/02	7/2/03	0 d
L-3-155	118	L3 Managers Review of Controls Syst Design Compl	3/3/03	10/10/03	0 d
L-3-196	112	Production Target Fabrication Complete	3/17/03	12/19/03	0 d
L-3-179	120	Pit Liner Complete	3/31/03	7/7/03	0 d
L-3-172	113	Kicker Power Supply Design & Dwgs Compl	3/31/03	7/17/03	0 d
L-3-173	114	Purch Order for Core Modules, Aluminum Submitted	4/1/03	7/15/03	0 d
L-3-192	117	U.S. LCW Syst Piping & Equip Installed in MI-62	4/30/03	11/7/03	0 d
L-3-175	118	Sub Req for Shaft Cables for SB&O Installation	5/23/03	7/15/03	0 d
L-3-178	114	Core Backshielding Steel Fabricated	6/16/03	11/28/03	0 d
L-3-191	120	Target Service Bldg Shell Complete	6/17/03	8/15/03	0 d
L-3-327	111	Conventional Magnets Ready for Installation in 2003 Shutdown	6/30/03	7/26/03	0 d
L-3-176	118	Cable System Specifications Complete	6/30/03	8/18/03	0 d
L-3-193	120	MSB Shell Complete	7/14/03	9/19/03	0 d
L-3-332	111	Pre-Target Magnet Stands Design & Drafting Complete	7/15/03	8/16/03	0 d
L-3-171	112	Upper Chase Shielding Fab & Installation Dwg Set Compl	7/31/03	9/29/03	0 d
L-3-174	112	Production Horn 1 Assembly Complete	7/31/03	8/7/03	0 d
L-3-328	111	Major Magnet Stands Ready for MI and Stub Installation	8/1/03	9/2/03	0 d
L-3-333	111	BPM Electronics Procurement Started	8/22/03	10/18/03	0 d
L-3-190	112	Complete Horn 2 Operational Testing in Test Stand	8/29/03	8/22/03	0 d
L-3-170	113	Transmission Line Design & Dwgs Compl	9/15/03	8/15/03	0 d
L-3-197	112	Complete Horn 1 Operational Testing in Test Stand	9/15/03	12/5/03	0 d
L-3-335	111	Complete Beam Permit System Input Parameters	9/22/03	2/21/04	0 d
L-3-194	112	Assembly of Horn 1 Module Complete	9/30/03	10/7/03	0 d
L-3-215	111	Lambertson Magnet Installation Complete	10/10/03	7/23/04	0 d
L-3-198	120	Beneficial Occupancy of UG Target Area	10/20/03	10/6/03	0 d

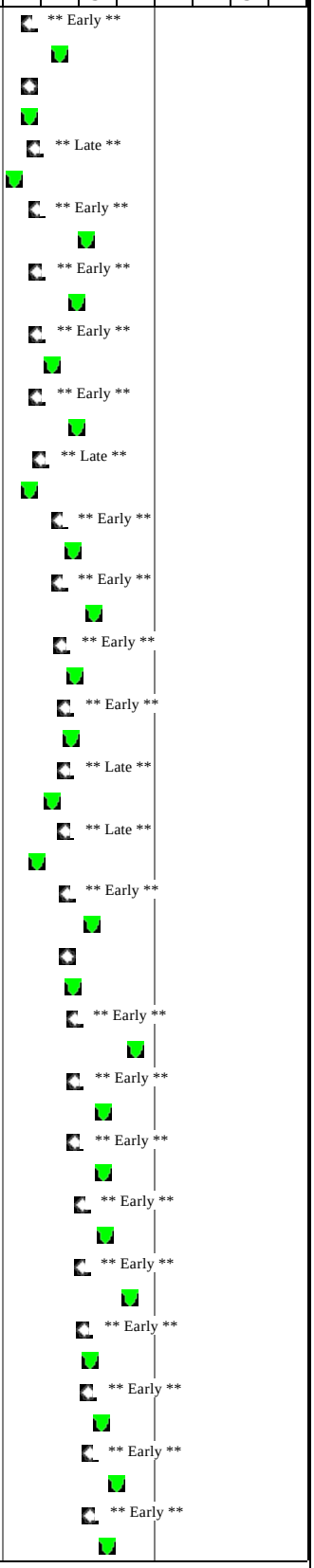


FNAL Current Forecast ◘ FNAL Baseline Date ■ Milestone Complete ■

NuMI WBS Level 3 Milestones
(7/2003 - 9/2005)

11/24/03

Mlstn#	WBS Lev	Name	FNAL Cur Forecast	FNAL Base Date	Float
L-3-329	111	MI & Stub Magnets Installed & Ready for Low Power Testing	11/3/03	1/15/04	193 d
L-3-334	111	Start Construction of Multi-Wires	11/7/03	11/2/03	20 d
L-3-153	117	RAW Systems Engineering Notes Sent for Review	11/17/03	9/30/03	205 d
L-3-213	115	Muon Monitors Ready for Installation	11/20/03	3/19/04	249 d
L-3-210	114	Start of U.S. VacuumEndcap Installation	11/24/03	2/27/04	210 d
L-3-331	111	Kicker Magnet Construction Complete	11/26/03	12/27/03	155 d
L-3-216	112	Assembly of Horn 2 Module Complete	11/26/03	2/26/04	150 d
L-3-237	111	Pre-Target Equip Stands Ready for Installation	12/2/03	11/3/03	50 d
L-3-195	113	Kicker Power Supply Construction Complete	1/15/04	2/16/04	130 d
L-3-217	115	Downstream Hadron Monitors Ready for Installation	1/15/04	4/7/04	238 d
L-3-235	112	Assy of Target/Baffle Module Complete	1/21/04	2/25/04	115 d
L-3-212	112	Assy of Horn 1 & Module Complete	1/30/04	2/13/04	139 d
L-3-218	120	B.O. of MINOS Shaft, Absorber, MINOS Tunnel & MINOS Hall	1/30/04	12/26/03	39 d
L-3-211	120	MINOS Service Bldg Complete	1/30/04	11/26/03	39 d
L-3-330	111	Low Power Test of MI Magnets Started	2/3/04	4/6/04	134 d
L-3-199	113	Compl Install of Horn Power Supply in PS Room	2/6/04	2/16/04	207 d
L-3-231	117	All Water System Skids Installed in Enclosures	2/19/04	7/16/04	188 d
L-3-219	111	Extraction Devices Ready for Installation	2/25/04	4/30/04	97 d
L-3-230	111	Kicker Ready to Install	2/25/04	4/30/04	97 d
L-3-308	112	Assy of Horn 2 & Module Complete	3/9/04	5/5/04	130 d
L-3-321	117	All Water System Skid Instrumentation Connected	3/11/04	7/4/04	239 d
L-3-320	113	Receipt of Major Transmission Line Materials & Parts	3/16/04	3/30/04	180 d
L-3-234	118	Fiber Optic Cable Installation Complete	3/25/04	4/26/04	69 d
L-3-214	118	FIRUS Cable System Installation Complete	3/29/04	5/31/04	212 d
L-3-310	112	Install Bottom Shielding Complete	3/31/04	5/12/04	62 d

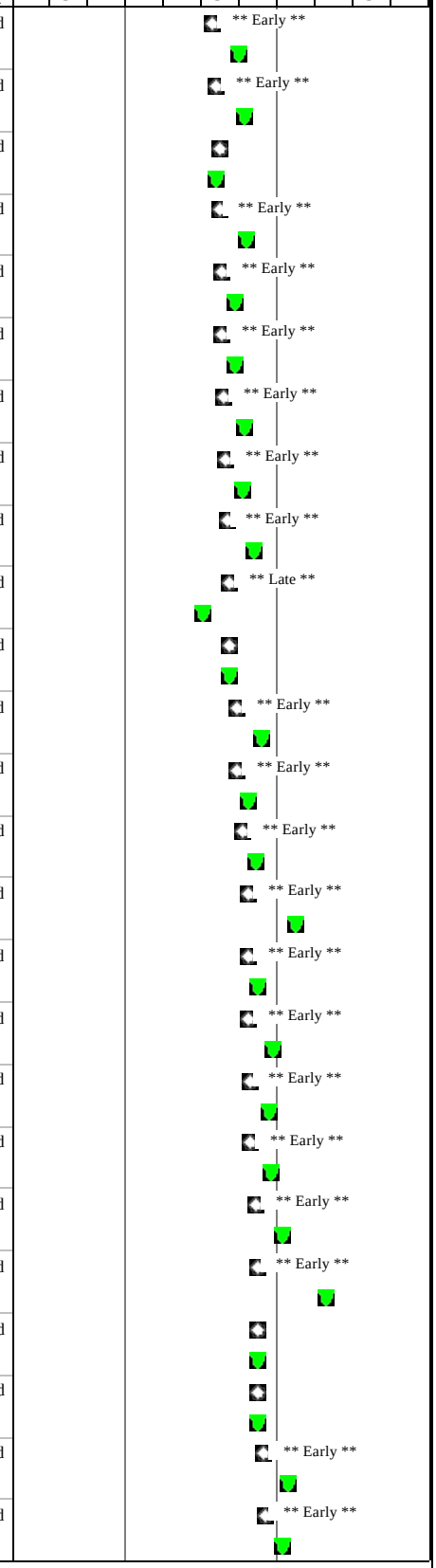


FNAL Current Forecast FNAL Baseline Date Milestone Complete

NuMI WBS Level 3 Milestones
(7/2003 - 9/2005)

11/24/03

Mlstn#	WBS Lev	Name	FNAL Cur Forecast	FNAL Base Date	Float
L-3-239	114	Test of VacuumIntegrity Complete	4/2/04	6/1/04	134 d
L-3-238	114	All Hadron Absorber Core Material Delivered	4/8/04	6/18/04	149 d
L-3-271	111	Target Interface Baffle/Window Ready for Install	4/16/04	4/9/04	28 d
L-3-258	115	Downstream Hadron Monitor Installed	4/16/04	6/21/04	204 d
L-3-309	112	Assy of Target Baffle on Module Complete	4/21/04	5/27/04	113 d
L-3-326	118	Personnel Safety Interlock Syst Enginering & Des Compl	4/22/04	5/27/04	185 d
L-3-236	116	Network in Target Hall	4/27/04	6/17/04	199 d
L-3-315	112	Targ Pile Carriage Pads on Concrete Install Compl	4/30/04	6/13/04	62 d
L-3-232	114	Start Absorber Outer Shielding Installation	5/3/04	7/9/04	156 d
L-3-252	111	Instrumentation Ready for Installation	5/11/04	3/5/04	13 d
L-3-250	113	Power Supply Refurbishing Complete	5/11/04	5/11/04	17 d
L-3-256	114	Assy of Core on Carrier Complete	5/28/04	7/27/04	134 d
L-3-251	111	Primary Beam Instrumentation Construction Compl	5/31/04	6/25/04	143 d
L-3-254	112	Compl Placement of Horn 1 into Target Station	6/14/04	7/12/04	69 d
L-3-259	118	Personnel Safety Interlock System Installation Complete	6/22/04	10/20/04	143 d
L-3-276	113	Complete Assy/Installation of Stripline	6/23/04	7/21/04	136 d
L-3-257	118	MI60 Cable Syst Install Compl (Excl Trim Elements)	6/25/04	8/20/04	154 d
L-3-255	115	Muon Monitors Installed	6/29/04	8/13/04	153 d
L-3-314	112	Compl Placement of Horn 2 Assy into Target Station	7/2/04	8/18/04	69 d
L-3-311	111	Install Pre-target Instrumentation Complete	7/12/04	9/15/04	135 d
L-3-297	115	Downstream Hadron Monitor Operational	7/14/04	12/28/04	153 d
L-3-324	118	NuMI Stub Cables Installed	7/19/04	7/19/04	9 d
L-3-274	113	Power Test of TH Conventional Power Supplies Compl	7/21/04	7/21/04	6 d
L-3-322	118	Complete Installation of Devices in MI	7/30/04	9/29/04	131 d
L-3-293	118	MI-62 Cable System Installation Complete	8/3/04	9/17/04	128 d

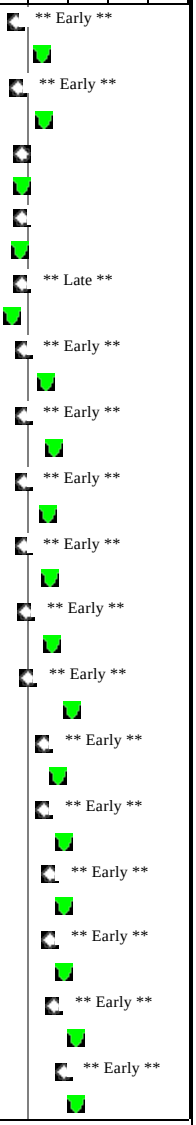


FNAL Current Forecast FNAL Baseline Date Milestone Complete

NuMI WBS Level 3 Milestones
(7/2003 - 9/2005)

11/24/03

Mlstn#	WBS Lev	Name	FNAL Cur Forecast	FNAL Base Date	Float
L-3-270	112	Target & Horn Installation Complete	8/4/04	10/5/04	128 d
L-3-294	114	Checkout Absorber Complete	8/10/04	10/8/04	134 d
L-3-277	113	Compl Install & Testing of Kicker PS	8/17/04	8/16/04	2 d
L-3-318	113	Power Test of MI60 & MI-62 Power Supplies Complete	8/17/04	8/13/04	2 d
L-3-253	118	Pre-Targ Hall & Targ Hall Cable Syst Installation Compl	8/17/04	7/26/04	129 d
L-3-291	111	MI Stub Installation Complete	8/20/04	10/13/04	115 d
L-3-299	111	Extraction & Primary Beam Checked Out	8/20/04	10/29/04	153 d
L-3-312	111	MI Installation Complete	8/20/04	10/18/04	126 d
L-3-278	111	Pre-Target Installation Complete	8/23/04	10/22/04	125 d
L-3-272	117	All Water Systems Checked Out	8/30/04	10/25/04	119 d
L-3-298	117	VacuumSystems Checked Out	8/31/04	12/10/04	118 d
L-3-290	112	Shielding Installation Complete (Pre-Hot Handling)	10/7/04	11/11/04	73 d
L-3-319	113	Start to Pulse & Checkout Horn System	10/8/04	11/25/04	74 d
L-3-295	112	Pulse & Checkout Horn System Complete	10/22/04	11/26/04	74 d
L-3-279	118	Controls Installation Complete	10/22/04	11/19/04	62 d
L-3-325	118	Controls Checkout Complete	10/29/04	12/20/04	77 d
L-3-296	115	Muon Monitors Operational	11/19/04	12/20/04	62 d

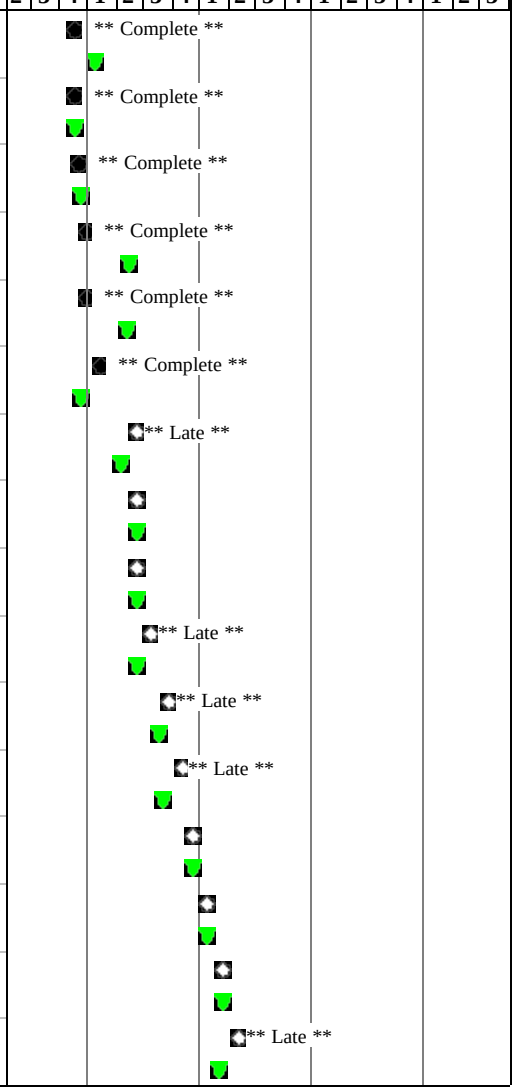


FNAL Current Forecast ◘ FNAL Baseline Date ■ Milestone Complete ●

MINOS WBS Level 3 Milestones
(7/2003 - 9/2005)

11/24/03

Mlstn #	WBS Lev 3	Name	FNAL Cur Forecast	FNAL Base Date	Float
L-3-300	245	Approve SM2 Coil Turnon - UMN/DNR/FNAL	7/9/03	9/15/03	0d
L-3-287	231	Complete Shipping for CalDet	7/10/03	7/10/03	0d
L-3-286	253	Complete Cable/Rack Mock-up	7/22/03	7/28/03	0d
L-3-288	222	100% of ND Clear Cables Complete	8/15/03	12/31/03	0d
L-3-285	225	100% of Near MUX Boxes Complete	8/15/03	12/30/03	0d
L-3-289	251	50% of ND Rack Assy Complete	9/30/03	7/31/03	0d
L-3-302	250	Near Detector Infrastructure Installation Started	1/30/04	12/10/03	44d
L-3-303	251	80% of ND Rack Assy Complete	1/30/04	1/30/04	44d
L-3-336	251	Checkout of Readout Equipment	1/30/04	1/30/04	49d
L-3-304	253	Begin Spectrometer Plane Installation	3/15/04	1/27/04	55d
L-3-301	231	Begin Near FE Electronics Installation	5/10/04	4/5/04	189d
L-3-305	253	25% Detector Installed	6/24/04	4/20/04	102d
L-3-337	253	Spectrometer Installation Complete	7/27/04	7/27/04	80d
L-3-338	253	50% of Calorimeter Planes Installed	9/15/04	9/15/04	45d
L-3-339	253	100% Detector Planes Installed	11/3/04	11/3/04	74d
L-3-306	250	Near Detector Installation Complete	12/27/04	10/22/04	39d



FNAL Current Forecast ◆ FNAL Baseline Date ■ Milestone Complete ■

Variance Summary Table

(Cumulative to Date as of 10/31/03)

WBS / Description	Budgeted Cost		Actual Cost	Variance	
	Work Scheduled	Work Performed	Work Performed	Schedule	Cost
1.1 Technical Components	18,712	19,557	20,585	845	(1,028)
1.2 Facility Construction	67,697	66,425	65,826	(1,273)	599
1.3 Project Management	3,399	3,394	2,686	(5)	708
1.0 TEC Total	**89,808**	**89,375**	**89,096**	**(433)**	**279**
2.1 Magnets: Steel & Coils	7,540	7,540	7,622	0	(81)
2.2 Scintillator Detector Fabrication	19,538	19,540	19,525	2	15
2.3 Electronics, DAQ & Database	9,052	9,086	8,669	34	416
2.4 Far Detector Installation	5,077	5,077	4,374	0	702
2.5 Near Detector Installation	3,386	2,983	2,868	(404)	115
2.6 MINOS Project Management	1,546	1,546	1,608	0	(62)
UK In-Kind Contribution	(4,803)	(4,802)	(4,802)	2	0
2.0 MINOS Detector	**41,335**	**40,970**	**39,865**	**(365)**	**1,105**
3.1. NuMI Conceptual Design	1,934	1,934	1,928	0	6
3.2 MINOS Detector R&D	1,780	1,780	1,768	(0)	12
3.3 MINOS Cavern	14,527	14,527	14,527	0	0
3.4 Soudan/MINOS Operating	1,896	1,896	1,677	0	219
Minnesota Preconstruction Funds	(758)	(758)	(758)	0	0
Minnesota Contruction Funds FY99	(3,000)	(3,000)	(3,000)	0	0
3.0 NuMI Project Support	**16,378**	**16,378**	**16,142**	**0**	**237**
OPC Total	**57,713**	**57,348**	**56,007**	**(365)**	**1,341**
TPC Total	**147,521**	**146,724**	**145,103**	**(798)**	**1,620**

IX. COST REPORTS

Cost and earned value reports for the NuMI Project are presented in two sets, one for WBS 1.0 Total Estimated Cost (TEC), and a second for Other Project Costs (OPC) that includes both the MINOS Detector (WBS 2.0) and Project Support (WBS 3.0). Information for all segments of the project is summarized at WBS Level 3 except in the case of the OPC CURVE Reports that are at WBS Level 2 instead. The actual cost of work performed (ACWP) is comprised of the following: 1) costs collected and reported by the Fermilab financial system, 2) costs collected and reported to NuMI Project Management by the University of Minnesota in their monthly progress report for WBS 3.3 MINOS Cavern, and 3) an estimate of the value of work performed by the United Kingdom (UK) collaborating institutions towards their in-kind contribution. Since the UK collaborating institutions are not required to report their actual costs to NuMI Project Management, we are assuming that actual current period costs and cumulative costs are equal to current period earned value and cumulative earned value, respectively. Each set of cost and earned value reports includes the following:

CPR Format 1A
This is a modified version of the traditional CPR Format 1 report that shows indirect cost for each WBS Level 3 rather than as a single line item for the entire project. As a result it is possible to review the status of both burdened and unburdened costs for each major system or cost component. In addition, the report for the OPC includes a summary section at the end, with WBS Level 2 totals for the MINOS Detector and Project Support segments of the project.

CPR Format 3
This is the traditional format for reporting changes to the project baseline that were approved and implemented in the current reporting period, as well as their impact on the time phased project baseline.

CURVE Reports
These graphically depict cumulative Budgeted Cost of Work Scheduled (BCWS), Budgeted Cost of Work Performed (BCWP), and Actual Cost of Work Performed (ACWP), at WBS Level 3 and WBS Level 2 for the TEC and OPC, respectively. The OPC reports reflect all project costs, including the UK In-Kind Contribution, and also funding contributed ($3.758M) by the University of Minnesota. All amounts shown are fully burdened.

Plan v Act Reports
These reports compare burdened planned costs (BCWS) with burdened actual costs (ACWP) on a cumulative basis through the end of the prior fiscal year, and by month for the current fiscal year. There are two versions of this report, one for total cost, and a second for labor costs only. Both OPC versions exclude the value of UK In-Kind Contributions and thus represent US Funds only.

NuMI Project Obligations
This report reflects burdened obligations to date, including requisitions in progress, for the entire project, as recorded in the Fermilab financial system. Consequently, it does not include any assumed obligations with respect to work performed by the UK collaborating institutions. Nor

does it reflect actual amounts obligated by the University of Minnesota under the grant for WBS 3.3 MINOS Cavern; instead, obligations shown for WBS 3.3 represent the cumulative amount of the Financial Plan transfers to the University of Minnesota from the Fermilab budget.

NuMI Project TEC

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI TEC		9/30/03	10/31/03		
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	109,242		0		0	0	109,242	0		0	0		
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest	
Results...	Work	Work	Work			Work	Work	Work				Revised	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.1 Technical Components													
1.1.1 Extraction & Primary Beam													
Direct Cost + Escalation	126	126	468	0	(342)	3,278	3,156	3,476	(122)	(320)	3,969	3,969	0
Indirect Cost	25	24	90	(1)	(66)	773	737	852	(35)	(115)	917	917	0
WBS[3]Totals:	150	150	558	(1)	(409)	4,051	3,893	4,328	(157)	(435)	4,887	4,887	0
1.1.2 Neutrino Beam Devices													
Direct Cost + Escalation	228	148	240	(80)	(93)	6,034	6,411	6,572	376	(161)	8,121	8,121	0
Indirect Cost	45	32	52	(14)	(20)	1,429	1,521	1,510	93	11	1,892	1,892	0
WBS[3]Totals:	273	180	292	(94)	(112)	7,463	7,932	8,082	469	(149)	10,012	10,012	0
1.1.3 Power Supply System													
Direct Cost + Escalation	117	18	161	(99)	(142)	3,301	3,149	3,383	(152)	(234)	3,827	3,827	0
Indirect Cost	22	3	28	(19)	(25)	796	766	797	(30)	(31)	910	910	0
WBS[3]Totals:	139	21	189	(117)	(167)	4,097	3,915	4,180	(182)	(265)	4,738	4,738	0
1.1.4 Hadron Decay and Absorber													
Direct Cost + Escalation	81	90	26	9	64	518	521	574	3	(54)	1,161	1,161	0
Indirect Cost	15	17	5	2	11	139	140	146	1	(6)	267	267	0
WBS[3]Totals:	95	106	31	11	75	657	661	721	4	(60)	1,428	1,428	0
1.1.5 Neutrino Beam Monitoring													
Direct Cost + Escalation	15	0	31	(15)	(31)	279	368	278	89	90	455	455	0
Indirect Cost	0	0	0	(0)	0	23	24	36	1	(11)	26	26	0
WBS[3]Totals:	15	0	31	(15)	(31)	302	392	314	90	79	481	481	0
1.1.6 Alignment Systems													
Direct Cost + Escalation	3	1	0	(2)	1	203	200	151	(3)	49	240	240	0
Indirect Cost	1	0	0	(1)	0	58	58	39	(1)	19	68	68	0
WBS[3]Totals:	4	2	0	(3)	2	261	257	190	(3)	68	308	308	0
1.1.7 Water, Vacuum & Gas Systems													
Direct Cost + Escalation	160	22	52	(139)	(30)	810	978	1,175	168	(198)	1,778	1,778	0
Indirect Cost	29	4	11	(25)	(7)	184	225	258	41	(33)	407	407	0
WBS[3]Totals:	189	25	63	(164)	(37)	995	1,203	1,433	208	(230)	2,185	2,185	0
1.1.8 Installation and Integration													
Direct Cost + Escalation	53	121	181	69	(60)	653	995	1,065	341	(70)	2,262	2,262	0
Indirect Cost	13	23	30	11	(7)	171	246	210	75	35	502	502	0
WBS[3]Totals:	65	145	212	79	(67)	824	1,240	1,275	416	(35)	2,764	2,764	0
1.1.9 Hadronic Hose (Close-out)													
Direct Cost + Escalation	0	0	0	0	0	53	53	54	0	(0)	53	53	0
Indirect Cost	0	0	0	0	0	9	9	9	0	(0)	9	9	0
WBS[3]Totals:	0	0	0	0	0	62	62	63	0	(1)	62	62	0
WBS[2]Totals:	932	629	1,375	(303)	(746)	18,712	19,557	20,585	845	(1,028)	26,865	26,865	0

NuMI Project TEC

($000's Omitted)

Cost Performance Report - Work Breakdown Structure

Contractor:	Fermi National Accelerator Laboratory			Contract Type/No:			Project Name/No:		Report Period:		
Location:	Batavia						NuMI TEC		9/30/03	10/31/03	
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work	Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling	
1	109,242		0	0	0	109,242	0		0	0	
WBS[2]	Current Period					Cumulative to Date				At Completion		
WBS[3]			Actual					Actual				
Results...	Budgeted Cost		Cost	Variance		Budgeted Cost		Cost	Variance		Latest	
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Revised Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.2 Facility Construction													
1.2.1 Facility Physics Design Phase													
Direct Cost + Escalation	0	0	0	0	0	49	49	52	0	(3)	49	49	0
Indirect Cost	0	0	0	0	0	21	21	19	0	2	21	21	0
WBS[3]Totals:	0	0	0	0	0	70	70	70	0	(0)	70	70	0
1.2.2 Facility Construction Title I Design Phase													
Direct Cost + Escalation	0	0	0	0	0	1,254	1,254	1,288	0	(34)	1,254	1,254	0
Indirect Cost	0	0	0	0	0	184	184	149	0	35	184	184	0
WBS[3]Totals:	0	0	0	0	0	1,438	1,438	1,437	0	1	1,438	1,438	0
1.2.3 Facility Construction Title II Design Phase													
Direct Cost + Escalation	0	0	0	0	0	2,620	2,620	2,807	0	(187)	2,620	2,620	0
Indirect Cost	0	0	0	0	0	355	355	167	0	188	355	355	0
WBS[3]Totals:	0	0	0	0	0	2,975	2,975	2,974	0	1	2,975	2,975	0
1.2.4 Facility Construction Phase													
Direct Cost + Escalation	648	1,286	827	637	459	61,672	60,400	59,979	(1,271)	421	61,967	61,967	0
Indirect Cost	14	25	24	11	2	1,542	1,541	1,365	(2)	176	1,596	1,596	0
WBS[3]Totals:	663	1,311	851	648	461	63,214	61,941	61,344	(1,273)	597	63,563	63,563	0
WBS[2]Totals:	663	1,311	851	648	461	67,697	66,425	65,826	(1,273)	599	68,047	68,047	0
1.3 Project Management													
1.3.1 FY 98 Project Management													
Direct Cost + Escalation	0	0	0	0	0	208	208	104	0	104	208	208	0
Indirect Cost	0	0	0	0	0	66	66	37	0	29	66	66	0
WBS[3]Totals:	0	0	0	0	0	275	275	141	0	133	275	275	0
1.3.2 FY 99 Project Management													
Direct Cost + Escalation	0	0	0	0	0	425	425	512	0	(88)	425	425	0
Indirect Cost	0	0	0	0	0	135	135	149	0	(14)	135	135	0
WBS[3]Totals:	0	0	0	0	0	560	560	661	0	(102)	560	560	0
1.3.3 FY 00 Project Management													
Direct Cost + Escalation	0	0	0	0	0	436	436	521	0	(85)	436	436	0
Indirect Cost	0	0	0	0	0	139	139	142	0	(3)	139	139	0
WBS[3]Totals:	0	0	0	0	0	575	575	663	0	(88)	575	575	0
1.3.4 FY 01 Project Management													
Direct Cost + Escalation	0	0	0	0	0	522	522	331	0	191	522	522	0
Indirect Cost	0	0	0	0	0	166	166	92	0	74	166	166	0
WBS[3]Totals:	0	0	0	0	0	688	688	423	0	265	688	688	0

NuMI Project TEC

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI TEC		9/30/03	10/31/03		
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	109,242		0		0	0	109,242	0		0	0		
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest	
Results...	Work	Work	Work			Work	Work	Work				Revised	
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
1.3.5 FY 02 Project Management													
Direct Cost + Escalation	0	0	0	0	0	533	533	253	0	281	533	533	0
Indirect Cost	0	0	0	0	0	170	170	72	0	98	170	170	0
WBS[3]Totals:	0	0	0	0	0	703	703	324	0	378	703	703	0
1.3.6 FY 03 Project Management													
Direct Cost + Escalation	0	0	0	0	0	411	411	324	0	87	411	411	0
Indirect Cost	0	0	0	0	0	131	131	98	0	33	131	131	0
WBS[3]Totals:	0	0	0	0	0	541	541	421	0	120	541	541	0
1.3.7 FY 04 Project Management													
Direct Cost + Escalation	44	40	40	(4)	(0)	44	40	40	(4)	(0)	499	499	0
Indirect Cost	14	13	12	(1)	0	14	13	12	(1)	0	159	159	0
WBS[3]Totals:	58	53	52	(5)	0	58	53	52	(5)	0	658	658	0
1.3.8 FY 05 Project Management													
Direct Cost + Escalation	0	0	0	0	0	0	0	0	0	0	251	251	0
Indirect Cost	0	0	0	0	0	0	0	0	0	0	80	80	0
WBS[3]Totals:	0	0	0	0	0	0	0	0	0	0	330	330	0
WBS[2]Totals:	58	53	52	(5)	0	3,399	3,394	2,686	(5)	708	4,330	4,330	0
General and Administrative	0	0	0	0	0	0	0	0	0	0	0	0	0
Undistributed Budget											0	0	0
Sub Total	1,652	1,993	2,278	340	(285)	89,808	89,375	89,096	(433)	279	99,242	99,242	0
Contingency											10,000	10,000	0
Total	1,652	1,993	2,278	340	(285)	89,808	89,375	89,096	(433)	279	109,242	109,242	0

NuMI Project TEC

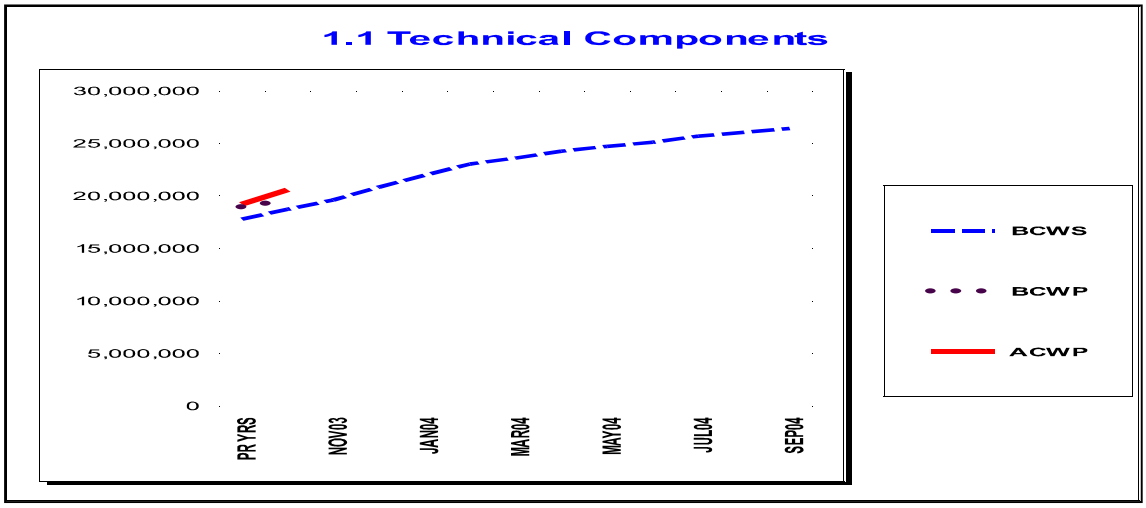
($000's Omitted)

Cost Performance Report - Baseline															
Contractor:	Fermi National Accelerator Laboratory			Contract Type/No:		Project Name/No:				Report Period:					
Location:	Batavia					NuMI TEC				9/30/03				10/31/03	
(1) Original Contract Target Cost		(2) Negotiated Contract Changes		(3) Current Target Cost		(4) Est. Cost Authorized Authorized Unpriced Work			(5) Contract Budget Base (3) + (4)			(6) Total Allocated Budget		(7) Difference (5) - (6)	
76,200		33,042		109,242		0			109,242			109,242		(0)	
(8) Contract Start Date 10/1/97		(9) Contract Definitization Date 10/1/97				(10) Last Item Delivery Date 9/30/03				(11) Contract Completion Date 9/30/03				(12) Estimated Completion Date 9/30/03	

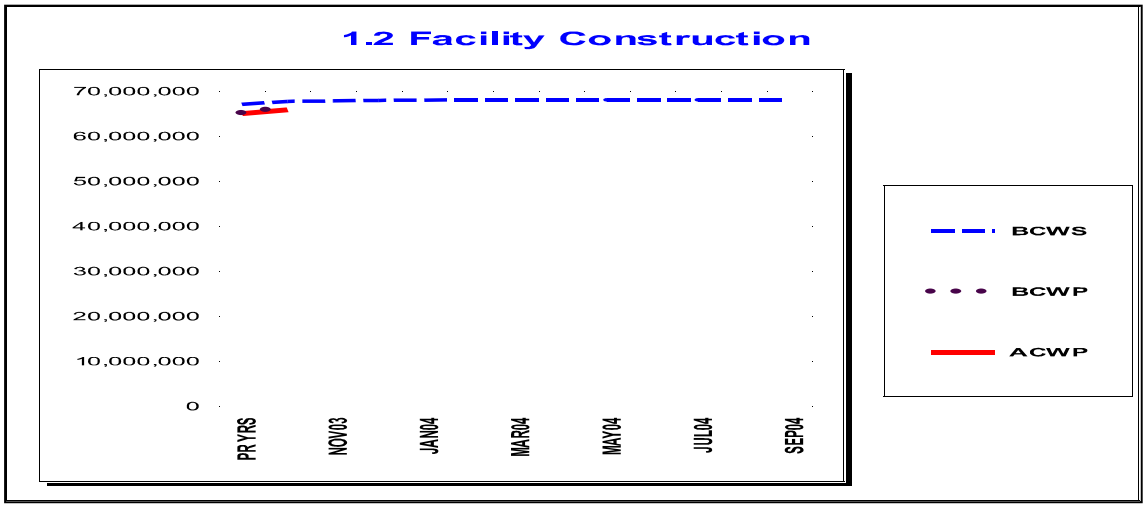
Item	BCWS Cum to Date	BCWS for Report Period	Budgeted Cost for Work Scheduled (Non-Cumulative)											Undist Budget	Total Budget
			Six Month Forecast						(Enter Specific Periods)						
			+1 NOV03	+2 DEC03	+3 JAN04	+4 FEB04	+5 MAR04	+6 APR04	BAL FY04	FY05					
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
PM Baseline (Beginning of Period)	88,157	1,582	1,035	1,385	1,250	1,181	626	707	2,427	795	0	0	0	0	99,145
252 Correct Oversight from CR #242															97
PM Baseline (End of Period)	89,808		1,039	1,397	1,261	1,183	626	707	2,427	795	0	0	0	0	99,242
Contingency															10,000
Total															109,242

NuMI Project TEC

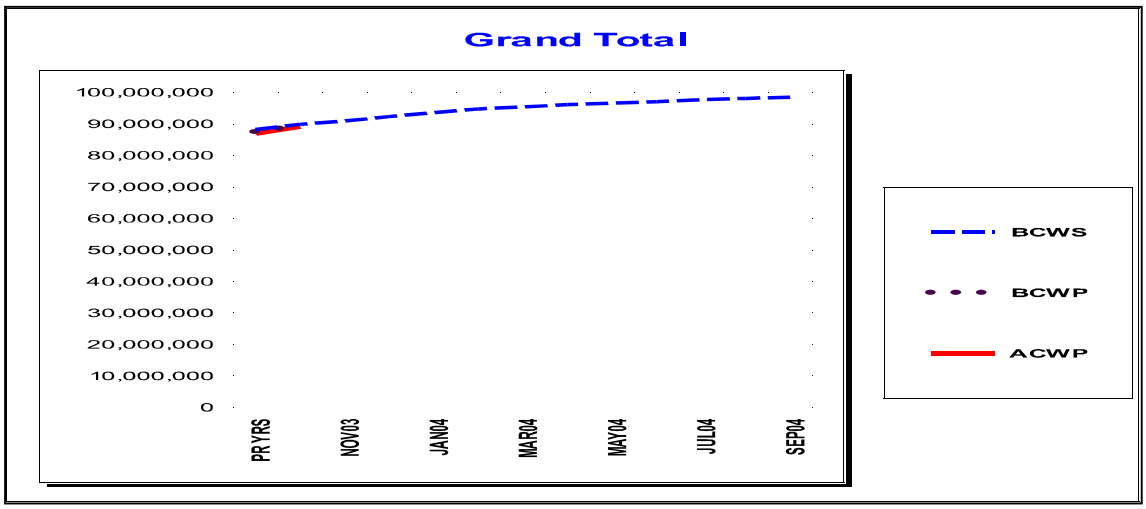
($000's Omitted)



	PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04
BCWS	17,780	18,712	19,604	20,826	21,954	23,029	23,595	24,247	24,712	25,103	25,681	26,045	26,400
BCWP	18,928	19,557											
ACWP	19,209	20,585											



	PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04
BCWS	67,035	67,697	67,793	67,911	67,988	68,045	68,047	68,047	68,047	68,047	68,047	68,047	68,047
BCWP	65,113	66,425											
ACWP	64,975	65,826											



	PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04
BCWS	88,156	89,808	90,847	92,244	93,504	94,687	95,312	96,020	96,538	96,984	97,617	98,037	98,447
BCWP	87,383	89,375											
ACWP	86,818	89,096											

NuMI Project TEC

($000's Omitted)

Program:	Description:	Approval:
NUMITEC	NuMI TEC	Program Manager
Run Date: 11/12/03	Status Date: 10/31/2003	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
1.1 Technical Components																
1.1.1 Extraction & Primary Beam	BCWS	3,900	150	204	221	121	92	35	47	8	7	71	4	14	12	4,887
	ACWP	3,769	558	0	0	0	0	0	0	0	0	0	0	0	0	4,328
1.1.2 Neutrino Beam Devices	BCWS	7,190	273	387	227	475	359	212	158	77	91	129	192	77	166	10,012
	ACWP	7,790	292	0	0	0	0	0	0	0	0	0	0	0	0	8,082
1.1.3 Power Supply System	BCWS	3,958	139	105	119	109	71	66	39	13	28	71	8	10	2	4,738
	ACWP	3,991	189	0	0	0	0	0	0	0	0	0	0	0	0	4,180
1.1.4 Hadron Decay and Absorber	BCWS	561	95	22	16	115	153	63	108	55	104	127	8	0	0	1,428
	ACWP	689	31	0	0	0	0	0	0	0	0	0	0	0	0	721
1.1.5 Neutrino Beam Monitoring	BCWS	286	15	13	96	6	3	3	1	5	6	10	9	0	28	481
	ACWP	283	31	0	0	0	0	0	0	0	0	0	0	0	0	314
1.1.6 Alignment Systems	BCWS	257	4	1	3	3	2	3	6	3	3	3	3	5	13	308
	ACWP	190	0	0	0	0	0	0	0	0	0	0	0	0	0	190
1.1.7 Water, Vacuum & Gas Systems	BCWS	806	189	87	269	216	72	64	86	102	36	119	77	36	26	2,185
	ACWP	1,371	63	0	0	0	0	0	0	0	0	0	0	0	0	1,433
1.1.8 Installation and Integration	BCWS	759	65	74	270	85	323	120	207	204	116	47	64	211	219	2,764
	ACWP	1,063	212	0	0	0	0	0	0	0	0	0	0	0	0	1,275
1.1.9 Hadronic Hose (Close-out)	BCWS	62	0	0	0	0	0	0	0	0	0	0	0	0	0	62
	ACWP	63	0	0	0	0	0	0	0	0	0	0	0	0	0	63
WBS[2] Totals:	BCWS	17,780	932	893	1,222	1,129	1,075	566	652	465	391	578	364	355	465	26,865
	ACWP	19,209	1,375	0	0	0	0	0	0	0	0	0	0	0	0	20,585
1.2 Facility Construction																
1.2.1 Facility Physics Design Phase	BCWS	70	0	0	0	0	0	0	0	0	0	0	0	0	0	70
	ACWP	70	0	0	0	0	0	0	0	0	0	0	0	0	0	70
1.2.2 Facility Construction Title I Design Phase	BCWS	1,438	0	0	0	0	0	0	0	0	0	0	0	0	0	1,438
	ACWP	1,437	0	0	0	0	0	0	0	0	0	0	0	0	0	1,437
1.2.3 Facility Construction Title II Design Phase	BCWS	2,975	0	0	0	0	0	0	0	0	0	0	0	0	0	2,975
	ACWP	2,974	0	0	0	0	0	0	0	0	0	0	0	0	0	2,974
1.2.4 Facility Construction Phase	BCWS	62,551	663	96	117	77	57	2	0	0	0	0	0	0	0	63,563
	ACWP	60,493	851	0	0	0	0	0	0	0	0	0	0	0	0	61,344
WBS[2] Totals:	BCWS	67,035	663	96	117	77	57	2	0	0	0	0	0	0	0	68,047
	ACWP	64,975	851	0	0	0	0	0	0	0	0	0	0	0	0	65,826
1.3 Project Management																
1.3.1 FY 98 Project Management	BCWS	275	0	0	0	0	0	0	0	0	0	0	0	0	0	275
	ACWP	141	0	0	0	0	0	0	0	0	0	0	0	0	0	141
1.3.2 FY 99 Project Management	BCWS	560	0	0	0	0	0	0	0	0	0	0	0	0	0	560
	ACWP	661	0	0	0	0	0	0	0	0	0	0	0	0	0	661
1.3.3 FY 00 Project Management	BCWS	575	0	0	0	0	0	0	0	0	0	0	0	0	0	575
	ACWP	663	0	0	0	0	0	0	0	0	0	0	0	0	0	663

NuMI Project TEC

($000's Omitted)

Program:	Description:	Approval:
NUMITEC	NuMI TEC	Program Manager
Run Date: 11/12/03	Status Date: 10/31/2003	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
1.3.4 FY 01 Project Management	BCWS	688	0	0	0	0	0	0	0	0	0	0	0	0	0	688
	ACWP	423	0	0	0	0	0	0	0	0	0	0	0	0	0	423
1.3.5 FY 02 Project Management	BCWS	703	0	0	0	0	0	0	0	0	0	0	0	0	0	703
	ACWP	324	0	0	0	0	0	0	0	0	0	0	0	0	0	324
1.3.6 FY 03 Project Management	BCWS	541	0	0	0	0	0	0	0	0	0	0	0	0	0	541
	ACWP	421	0	0	0	0	0	0	0	0	0	0	0	0	0	421
1.3.7 FY 04 Project Management	BCWS	0	58	50	58	55	50	58	55	53	55	55	55	55	0	658
	ACWP	0	52	0	0	0	0	0	0	0	0	0	0	0	0	52
1.3.8 FY 05 Project Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	330	330
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	3,341	58	50	58	55	50	58	55	53	55	55	55	55	330	4,330
	ACWP	2,634	52	0	0	0	0	0	0	0	0	0	0	0	0	2,686
Grand Totals:	BCWS	88,156	1,652	1,039	1,397	1,261	1,183	626	707	518	446	633	420	410	795	99,242
	ACWP	86,818	2,278	0	0	0	0	0	0	0	0	0	0	0	0	89,096

NuMI Project TEC - Labor Only

($000's Omitted)

Program:	Description:	Approval:
NUMITEC	NuMI TEC	Program Manager
Run Date: 11/12/03	Status Date: 10/31/2003	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
1.1 Technical Components																
1.1.1 Extraction & Primary Beam	BCWS	1,936	35	26	32	32	28	22	32	8	7	41	4	14	12	2,230
	ACWP	2,388	135	0	0	0	0	0	0	0	0	0	0	0	0	2,523
1.1.2 Neutrino Beam Devices	BCWS	3,815	72	70	132	154	120	102	63	51	73	50	45	43	121	4,910
	ACWP	4,630	118	0	0	0	0	0	0	0	0	0	0	0	0	4,749
1.1.3 Power Supply System	BCWS	2,122	21	8	3	27	38	16	32	12	21	53	8	10	2	2,374
	ACWP	2,622	21	0	0	0	0	0	0	0	0	0	0	0	0	2,643
1.1.4 Hadron Decay and Absorber	BCWS	448	11	22	16	12	31	11	21	18	26	22	8	0	0	645
	ACWP	555	11	0	0	0	0	0	0	0	0	0	0	0	0	567
1.1.5 Neutrino Beam Monitoring	BCWS	78	0	0	0	0	0	0	0	0	0	0	0	0	0	78
	ACWP	74	0	0	0	0	0	0	0	0	0	0	0	0	0	74
1.1.6 Alignment Systems	BCWS	207	4	1	3	3	2	3	3	3	3	3	3	3	5	244
	ACWP	140	0	0	0	0	0	0	0	0	0	0	0	0	0	140
1.1.7 Water, Vacuum & Gas Systems	BCWS	413	17	21	33	40	30	46	61	69	34	96	57	21	26	964
	ACWP	634	20	0	0	0	0	0	0	0	0	0	0	0	0	655
1.1.8 Installation and Integration	BCWS	508	33	29	31	30	27	45	46	40	42	32	32	73	120	1,088
	ACWP	383	12	0	0	0	0	0	0	0	0	0	0	0	0	395
1.1.9 Hadronic Hose (Close-out)	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	9,527	193	177	249	298	276	244	257	201	206	297	157	164	286	12,533
	ACWP	11,426	319	0	0	0	0	0	0	0	0	0	0	0	0	11,745
1.2 Facility Construction																
1.2.1 Facility Physics Design Phase	BCWS	70	0	0	0	0	0	0	0	0	0	0	0	0	0	70
	ACWP	70	0	0	0	0	0	0	0	0	0	0	0	0	0	70
1.2.2 Facility Construction Title I Design Phase	BCWS	300	0	0	0	0	0	0	0	0	0	0	0	0	0	300
	ACWP	299	0	0	0	0	0	0	0	0	0	0	0	0	0	299
1.2.3 Facility Construction Title II Design Phase	BCWS	556	0	0	0	0	0	0	0	0	0	0	0	0	0	556
	ACWP	556	0	0	0	0	0	0	0	0	0	0	0	0	0	556
1.2.4 Facility Construction Phase	BCWS	2,827	52	45	52	49	45	2	0	0	0	0	0	0	0	3,071
	ACWP	2,853	76	0	0	0	0	0	0	0	0	0	0	0	0	2,929
WBS[2] Totals:	BCWS	3,754	52	45	52	49	45	2	0	0	0	0	0	0	0	3,998
	ACWP	3,778	76	0	0	0	0	0	0	0	0	0	0	0	0	3,854
1.3 Project Management																
1.3.1 FY 98 Project Management	BCWS	275	0	0	0	0	0	0	0	0	0	0	0	0	0	275
	ACWP	125	0	0	0	0	0	0	0	0	0	0	0	0	0	125
1.3.2 FY 99 Project Management	BCWS	560	0	0	0	0	0	0	0	0	0	0	0	0	0	560
	ACWP	595	0	0	0	0	0	0	0	0	0	0	0	0	0	595
1.3.3 FY 00 Project Management	BCWS	575	0	0	0	0	0	0	0	0	0	0	0	0	0	575
	ACWP	616	0	0	0	0	0	0	0	0	0	0	0	0	0	616

NuMI Project TEC - Labor Only

($000's Omitted)

Program:	Description:	Approval:
NUMITEC	NuMI TEC	Program Manager
Run Date: 11/12/03	Status Date: 10/31/2003	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
1.3.4 FY 01 Project Management	BCWS	688	0	0	0	0	0	0	0	0	0	0	0	0	0	688
	ACWP	416	0	0	0	0	0	0	0	0	0	0	0	0	0	416
1.3.5 FY 02 Project Management	BCWS	703	0	0	0	0	0	0	0	0	0	0	0	0	0	703
	ACWP	324	0	0	0	0	0	0	0	0	0	0	0	0	0	324
1.3.6 FY 03 Project Management	BCWS	541	0	0	0	0	0	0	0	0	0	0	0	0	0	541
	ACWP	416	0	0	0	0	0	0	0	0	0	0	0	0	0	416
1.3.7 FY 04 Project Management	BCWS	0	58	50	58	55	50	58	55	53	55	55	55	55	0	658
	ACWP	0	52	0	0	0	0	0	0	0	0	0	0	0	0	52
1.3.8 FY 05 Project Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	330	330
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	3,341	58	50	58	55	50	58	55	53	55	55	55	55	330	4,330
	ACWP	2,493	52	0	0	0	0	0	0	0	0	0	0	0	0	2,545
Grand Totals:	BCWS	16,622	303	272	358	402	372	304	312	254	261	352	213	220	616	20,860
	ACWP	17,697	447	0	0	0	0	0	0	0	0	0	0	0	0	18,144

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI Other Proj Costs		9/30/03		10/31/03	
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	62,200		0		0	0	62,200	0		0	0		
WBS[2] WBS[3] Results...	Current Period					Cumulative to Date					At Completion		
	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest	
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Revised Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2.1 Magnets: Steel & Coils													
2.1.1 Steel Plane Fabrication													
Direct Cost + Escalation	1	0	0	(1)	0	4,396	4,397	4,375	0	21	4,397	4,397	0
Indirect Cost	0	0	0	(0)	0	232	232	226	0	6	232	232	0
WBS[3]Totals:	1	0	0	(1)	0	4,628	4,629	4,601	0	27	4,629	4,629	0
2.1.2 Steel handling fixtures													
Direct Cost + Escalation	0	0	0	0	0	620	620	637	(0)	(17)	620	620	0
Indirect Cost	0	0	0	0	0	153	153	157	0	(3)	153	153	0
WBS[3]Totals:	0	0	0	0	0	773	773	793	0	(20)	773	773	0
2.1.3 Near Detector Support Structures													
Direct Cost + Escalation	0	0	0	0	0	0	0	1	0	(1)	0	0	0
Indirect Cost	0	0	0	0	0	4	4	0	0	4	4	4	0
WBS[3]Totals:	0	0	0	0	0	5	5	1	0	3	5	5	0
2.1.4 Magnet Coil													
Direct Cost + Escalation	0	0	0	0	0	1,291	1,291	1,373	(0)	(82)	1,291	1,291	0
Indirect Cost	0	0	0	0	0	271	271	300	0	(29)	271	271	0
WBS[3]Totals:	0	0	0	0	0	1,562	1,562	1,673	0	(111)	1,562	1,562	0
2.1.5 Detector Plane Prototypes													
Direct Cost + Escalation	0	0	0	0	0	394	394	394	0	0	394	394	0
Indirect Cost	0	0	0	0	0	106	106	102	(0)	5	106	106	0
WBS[3]Totals:	0	0	0	0	0	501	501	496	(0)	5	501	501	0
2.1.6 Steel Management													
Direct Cost + Escalation	0	0	0	0	0	66	66	52	0	13	66	66	0
Indirect Cost	0	0	0	0	0	6	6	5	(0)	1	6	6	0
WBS[3]Totals:	0	0	0	0	0	71	71	57	(0)	14	71	71	0
WBS[2]Totals:	1	0	0	(1)	0	7,540	7,540	7,622	0	(81)	7,540	7,540	0
2.2 Scintillator Detector Fabrication													
2.2.1 Scintillator Strips													
Direct Cost + Escalation	0	0	0	0	0	2,912	2,912	2,867	0	45	2,912	2,912	0
Indirect Cost	0	0	0	0	0	270	270	289	0	(19)	270	270	0
WBS[3]Totals:	0	0	0	0	0	3,182	3,182	3,156	0	26	3,182	3,182	0
2.2.2 Fiber													
Direct Cost + Escalation	0	0	0	0	0	4,313	4,313	4,270	0	43	4,313	4,313	0
Indirect Cost	0	0	0	0	0	61	61	26	0	35	61	61	0
WBS[3]Totals:	0	0	0	0	0	4,374	4,374	4,296	0	78	4,374	4,374	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI Other Proj Costs		9/30/03		10/31/03	
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	62,200		0		0	0	62,200	0		0	0		
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]			Actual					Actual					
Results...	Budgeted Cost		Cost	Variance		Budgeted Cost		Cost	Variance			Latest	
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Revised Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2.2.3 Scintillator Modules													
Direct Cost + Escalation	0	0	0	0	0	1,925	1,925	1,893	0	32	1,925	1,925	0
Indirect Cost	0	0	0	0	0	84	84	89	0	(6)	84	84	0
WBS[3]Totals:	0	0	0	0	0	2,008	2,008	1,982	0	26	2,008	2,008	0
2.2.4 Photodetector Systems													
Direct Cost + Escalation	3	0	0	(3)	0	2,172	2,175	2,170	2	4	2,175	2,175	0
Indirect Cost	0	0	0	0	0	23	23	9	(0)	14	23	23	0
WBS[3]Totals:	3	0	0	(3)	0	2,196	2,198	2,179	2	19	2,198	2,198	0
2.2.5 Mux Boxes & Connectors													
Direct Cost + Escalation	0	0	0	0	0	1,368	1,368	1,397	(0)	(30)	1,368	1,368	0
Indirect Cost	0	0	0	0	0	23	23	23	(0)	(1)	23	23	0
WBS[3]Totals:	0	0	0	0	0	1,390	1,390	1,421	(0)	(30)	1,390	1,390	0
2.2.6 Calibration Systems													
Direct Cost + Escalation	0	0	0	0	0	1,105	1,105	1,103	0	3	1,105	1,105	0
Indirect Cost	0	0	0	0	0	1	1	0	0	1	1	1	0
WBS[3]Totals:	0	0	0	0	0	1,106	1,106	1,103	0	3	1,106	1,106	0
2.2.7 Ass'y & Test Equipment													
Direct Cost + Escalation	0	0	0	0	0	1,685	1,685	1,677	(0)	8	1,685	1,685	0
Indirect Cost	0	0	0	0	0	54	54	53	(0)	0	54	54	0
WBS[3]Totals:	0	0	0	0	0	1,739	1,739	1,731	(0)	8	1,739	1,739	0
2.2.8 Factories													
Direct Cost + Escalation	0	0	0	0	0	3,142	3,142	3,275	0	(133)	3,142	3,142	0
Indirect Cost	0	0	0	0	0	46	46	4	0	42	46	46	0
WBS[3]Totals:	0	0	0	0	0	3,188	3,188	3,279	0	(91)	3,188	3,188	0
2.2.9 Scintillator Management													
Direct Cost + Escalation	0	0	0	0	0	348	348	375	(0)	(27)	348	348	0
Indirect Cost	0	0	0	0	0	8	8	5	0	3	8	8	0
WBS[3]Totals:	0	0	0	0	0	355	355	379	(0)	(24)	355	355	0
WBS[2]Totals:	3	0	0	(3)	0	19,538	19,540	19,525	2	15	19,540	19,540	0
2.3 Electronics, DAQ & Database													
2.3.1 Near Detector Front End													
Direct Cost + Escalation	24	54	36	30	19	4,146	4,176	3,747	30	429	4,262	4,262	0
Indirect Cost	6	9	4	3	4	429	446	468	17	(22)	450	450	0
WBS[3]Totals:	30	63	40	33	23	4,575	4,622	4,215	47	407	4,712	4,712	0
2.3.2 Far Detector Front-end													
Direct Cost + Escalation	0	0	0	0	0	1,579	1,579	1,593	0	(15)	1,579	1,579	0
Indirect Cost	0	0	0	0	0	81	81	79	0	2	81	81	0
WBS[3]Totals:	0	0	0	0	0	1,660	1,660	1,672	0	(12)	1,660	1,660	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI Other Proj Costs		9/30/03		10/31/03	
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	62,200		0		0	0	62,200	0		0	0		
WBS[2] WBS[3] Results...	Current Period					Cumulative to Date					At Completion		
	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest	
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Revised Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2.3.3 Data Routing & Trigger Farm													
Direct Cost + Escalation	3	0	0	(3)	0	1,213	1,210	1,210	(3)	0	1,241	1,241	0
WBS[3]Totals:	3	0	0	(3)	0	1,213	1,210	1,210	(3)	0	1,241	1,241	0
2.3.4 Data Acquisition & Triggering													
Direct Cost + Escalation	0	0	0	(0)	0	389	389	389	(0)	0	391	391	0
WBS[3]Totals:	0	0	0	(0)	0	389	389	389	(0)	0	391	391	0
2.3.5 Database													
Direct Cost + Escalation	0	0	0	0	0	48	48	10	0	38	48	48	0
Indirect Cost	0	0	0	0	0	1	1	0	0	1	1	1	0
WBS[3]Totals:	0	0	0	0	0	48	48	10	0	38	48	48	0
2.3.6 Auxilliary Systems													
Direct Cost + Escalation	0	4	1	4	3	457	451	490	(6)	(39)	460	460	0
Indirect Cost	0	1	0	0	0	36	35	49	(1)	(14)	37	37	0
WBS[3]Totals:	0	5	2	4	3	493	486	539	(7)	(53)	497	497	0
2.3.7 Electronics Management													
Direct Cost + Escalation	0	0	0	0	0	143	142	183	(1)	(41)	143	143	0
Indirect Cost	0	0	0	0	0	2	2	1	(0)	1	2	2	0
WBS[3]Totals:	0	0	0	0	0	146	144	184	(1)	(40)	146	146	0
2.3.8 Slow Control & Monitoring													
Direct Cost + Escalation	0	0	0	0	0	433	432	361	(0)	72	433	433	0
Indirect Cost	0	0	0	0	0	12	12	12	(0)	(0)	12	12	0
WBS[3]Totals:	0	0	0	0	0	445	444	373	(0)	71	445	445	0
2.3.9 HV System													
Direct Cost + Escalation	1	0	0	(1)	0	74	74	66	0	7	74	74	0
Indirect Cost	0	0	0	(0)	0	9	9	11	0	(2)	9	9	0
WBS[3]Totals:	1	0	0	(1)	0	83	83	77	0	6	83	83	0
WBS[2]Totals:	34	68	42	33	26	9,052	9,086	8,669	34	416	9,222	9,222	0
2.4 Far Detector Installation													
2.4.1 FDI Completed Design Tasks													
Direct Cost + Escalation	0	0	0	0	0	0	0	0	0	0	0	0	0
Indirect Cost	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[3]Totals:	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4.2 FDI Management													
Direct Cost + Escalation	0	0	4	0	(4)	631	631	548	0	83	631	631	0
Indirect Cost	0	0	1	0	(1)	30	30	34	(0)	(4)	30	30	0
WBS[3]Totals:	0	0	5	0	(5)	661	661	582	(0)	79	661	661	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI Other Proj Costs		9/30/03		10/31/03	
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	62,200		0		0	0	62,200	0		0	0		
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]			Actual					Actual					
Results...	Budgeted Cost		Cost	Variance		Budgeted Cost		Cost	Variance			Latest	
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Revised Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2.4.3 SDN-FDI Construction Oversight													
Direct Cost + Escalation	0	0	0	0	0	58	58	115	0	(57)	58	58	0
WBS[3]Totals:	0	0	0	0	0	58	58	115	0	(57)	58	58	0
2.4.4 FDI Soudan Lab Infrastructure Setup													
Direct Cost + Escalation	0	0	0	0	0	507	507	469	0	38	507	507	0
Indirect Cost	0	0	0	0	0	2	2	4	0	(2)	2	2	0
WBS[3]Totals:	0	0	0	0	0	509	509	473	0	36	509	509	0
2.4.5 SDN-FDI Detector Installation													
Direct Cost + Escalation	0	0	0	0	0	3,084	3,084	2,753	0	331	3,084	3,084	0
Indirect Cost	0	0	0	0	0	0	0	6	0	(6)	0	0	0
WBS[3]Totals:	0	0	0	0	0	3,084	3,084	2,759	0	324	3,084	3,084	0
2.4.6 SDN-FDI DNR Costs													
Direct Cost + Escalation	0	0	0	0	0	708	708	378	0	330	708	708	0
Indirect Cost	0	0	0	0	0	0	0	1	0	(1)	0	0	0
WBS[3]Totals:	0	0	0	0	0	708	708	378	0	329	708	708	0
2.4.7 FDI Alignment & Survey													
Direct Cost + Escalation	0	0	0	0	0	51	51	58	0	(7)	51	51	0
Indirect Cost	0	0	0	0	0	6	6	9	(0)	(3)	6	6	0
WBS[3]Totals:	0	0	0	0	0	57	57	67	(0)	(10)	57	57	0
WBS[2]Totals:	0	0	5	0	(5)	5,077	5,077	4,374	0	702	5,077	5,077	0
2.5 Near Detector Installation													
2.5.1 NDI Infrastructure													
Direct Cost + Escalation	5	17	16	13	2	214	193	153	(22)	40	384	384	0
Indirect Cost	1	5	4	4	1	53	50	37	(3)	13	104	104	0
WBS[3]Totals:	6	22	20	17	2	267	242	190	(25)	52	488	488	0
2.5.2 NDI Plane Assembly													
Direct Cost + Escalation	0	0	0	0	0	393	393	403	0	(10)	393	393	0
Indirect Cost	0	0	0	0	0	123	123	111	(0)	12	123	123	0
WBS[3]Totals:	0	0	0	0	0	516	516	514	0	2	516	516	0
2.5.3 NDI Detector Installation													
Direct Cost + Escalation	4	1	0	(3)	1	12	13	33	2	(20)	818	818	0
Indirect Cost	1	0	0	(1)	0	2	3	7	0	(4)	213	213	0
WBS[3]Totals:	5	1	0	(4)	1	14	16	40	2	(24)	1,031	1,031	0
2.5.4 NDI Facility Experimental Infrastructure													
Direct Cost + Escalation	54	2	8	(53)	(6)	119	115	113	(4)	1	133	133	0
Indirect Cost	10	0	1	(9)	(1)	23	21	20	(3)	1	26	26	0
WBS[3]Totals:	64	2	9	(62)	(7)	142	136	134	(6)	2	160	160	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI Other Proj Costs		9/30/03		10/31/03	
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	62,200		0		0	0	62,200	0		0	0		
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3]			Actual					Actual					
Results...	Budgeted Cost		Cost	Variance		Budgeted Cost		Cost	Variance			Latest	
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Revised Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
2.5.5 RBI SB&O Experimental Systems Outfitting													
Direct Cost + Escalation	106	71	33	(35)	38	2,447	2,073	1,991	(374)	82	2,559	2,559	0
WBS[3]Totals:	106	71	33	(35)	38	2,447	2,073	1,991	(374)	82	2,559	2,559	0
WBS[2]Totals:	180	96	63	(84)	33	3,386	2,983	2,868	(404)	115	4,753	4,753	0
2.6 MINOS Project Management													
2.6.1 FNL-Project Management													
Direct Cost + Escalation	0	0	4	0	(4)	1,103	1,103	1,183	0	(80)	1,103	1,103	0
Indirect Cost	0	0	1	0	(1)	345	345	327	0	18	345	345	0
WBS[3]Totals:	0	0	5	0	(5)	1,448	1,448	1,510	0	(62)	1,448	1,448	0
2.6.2 ANL-Project Management													
Direct Cost + Escalation	0	0	0	0	0	96	96	96	0	(0)	96	96	0
Indirect Cost	0	0	0	0	0	1	1	1	0	0	1	1	0
WBS[3]Totals:	0	0	0	0	0	98	98	98	0	(0)	98	98	0
WBS[2]Totals:	0	0	5	0	(5)	1,546	1,546	1,608	0	(62)	1,546	1,546	0
3.1 NuMI Conceptual Design													
3.1.1 FNL-BD-NuMI CDR													
Direct Cost + Escalation	0	0	0	0	0	407	407	407	0	0	407	407	0
Indirect Cost	0	0	0	0	0	82	82	80	0	2	82	82	0
WBS[3]Totals:	0	0	0	0	0	489	489	487	0	2	489	489	0
3.1.2 FNL-BD-NuMI FESS CDR													
Direct Cost + Escalation	0	0	0	0	0	282	282	282	0	0	282	282	0
Indirect Cost	0	0	0	0	0	64	64	64	0	0	64	64	0
WBS[3]Totals:	0	0	0	0	0	346	346	346	0	0	346	346	0
3.1.3 FNL-NuMI Beam Design													
Direct Cost + Escalation	0	0	0	0	0	612	612	612	0	(0)	612	612	0
Indirect Cost	0	0	0	0	0	186	186	184	0	3	186	186	0
WBS[3]Totals:	0	0	0	0	0	798	798	796	0	3	798	798	0
3.1.4 FNL-BD-NuMI Project Management													
Direct Cost + Escalation	0	0	0	0	0	184	184	184	0	(0)	184	184	0
Indirect Cost	0	0	0	0	0	51	51	50	0	1	51	51	0
WBS[3]Totals:	0	0	0	0	0	235	235	234	0	1	235	235	0
3.1.5 FNL-Soudan Lab Design													
Direct Cost + Escalation	0	0	0	0	0	55	55	56	0	(1)	55	55	0
Indirect Cost	0	0	0	0	0	10	10	9	0	1	10	10	0
WBS[3]Totals:	0	0	0	0	0	65	65	65	0	0	65	65	0
WBS[2]Totals:	0	0	0	0	0	1,934	1,934	1,928	0	6	1,934	1,934	0

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure														
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:				
Location:	Batavia							NuMI Other Proj Costs		9/30/03		10/31/03		
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling			
1	62,200		0		0	0	62,200	0		0	0			
WBS[2]	Current Period					Cumulative to Date					At Completion			
WBS[3]	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance					
Results...	Work	Work	Work			Work	Work	Work				Latest		
Item	Scheduled	Performed	Performed	Schedule	Cost	Scheduled	Performed	Performed	Schedule	Cost	Budgeted	Revised Estimate	Variance	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	
3.2 MINOS Detector R&D														
3.2.1 FNL-MINOS Scintillator R&D														
Direct Cost + Escalation	0	0	0	0	0	879	879	870	0	9	879	879	0	
Indirect Cost	0	0	0	0	0	116	116	118	0	(1)	116	116	0	
WBS[3]Totals:	0	0	0	0	0	995	995	988	0	8	995	995	0	
3.2.2 FNL-MINOS Steel R&D														
Direct Cost + Escalation	0	0	0	0	0	553	553	550	0	2	553	553	0	
Indirect Cost	0	0	0	0	0	96	96	94	0	2	96	96	0	
WBS[3]Totals:	0	0	0	0	0	649	649	644	0	4	649	649	0	
3.2.3 FNL-RD-Neutrino Oscillation R&D														
Direct Cost + Escalation	0	0	0	0	0	116	116	116	0	0	116	116	0	
Indirect Cost	0	0	0	0	0	20	20	20	(0)	0	20	20	0	
WBS[3]Totals:	0	0	0	0	0	136	136	136	(0)	0	136	136	0	
WBS[2]Totals:	0	0	0	0	0	1,780	1,780	1,768	(0)	12	1,780	1,780	0	
3.3 MINOS Cavern														
3.3.0 Preconstruction Work														
Direct Cost + Escalation	0	0	0	0	0	758	758	758	0	0	758	758	0	
WBS[3]Totals:	0	0	0	0	0	758	758	758	0	0	758	758	0	
3.3.1 Cavern Construction														
Direct Cost + Escalation	0	0	0	0	0	6,597	6,597	6,597	0	0	6,597	6,597	0	
WBS[3]Totals:	0	0	0	0	0	6,597	6,597	6,597	0	0	6,597	6,597	0	
3.3.2 Cavern Outfitting														
Direct Cost + Escalation	0	0	0	0	0	7,171	7,171	7,171	0	0	7,171	7,171	0	
WBS[3]Totals:	0	0	0	0	0	7,171	7,171	7,171	0	0	7,171	7,171	0	
WBS[2]Totals:	0	0	0	0	0	14,527	14,527	14,527	0	0	14,527	14,527	0	
3.4 Soudan/MINOS Operating														
3.4.1 UMN-Mine Crew Support/Soudan Gen'l Operations														
Direct Cost + Escalation	0	0	0	0	0	1,702	1,702	1,503	0	198	1,702	1,702	0	
Indirect Cost	0	0	0	0	0	8	8	27	0	(20)	8	8	0	
WBS[3]Totals:	0	0	0	0	0	1,709	1,709	1,531	0	178	1,709	1,709	0	
3.4.2 UMN-Breitung Township Building Rental														
Direct Cost + Escalation	0	0	0	0	0	114	114	75	0	39	114	114	0	
WBS[3]Totals:	0	0	0	0	0	114	114	75	0	39	114	114	0	
3.4.3 UMN-E Peterson Salary														
Direct Cost + Escalation	0	0	0	0	0	73	73	71	0	2	73	73	0	
WBS[3]Totals:	0	0	0	0	0	73	73	71	0	2	73	73	0	
WBS[2]Totals:	0	0	0	0	0	1,896	1,896	1,677	0	219	1,896	1,896	0	

NuMI Other Project Costs

($000's Omitted)

Cost Performance Report - Work Breakdown Structure													
Contractor:	Fermi National Accelerator Laboratory				Contract Type/No:			Project Name/No:		Report Period:			
Location:	Batavia							NuMI Other Proj Costs		9/30/03		10/31/03	
Quantity	Negotiated Cost		Est. Cost Authorized Unpriced Work		Tgt. Profit/ Fee %		Tgt. Price	Est Price	Share Ratio	Contract Ceiling	Estimated Contract Ceiling		
1	62,200		0		0	0	62,200	0		0	0		
WBS[2]	Current Period					Cumulative to Date					At Completion		
WBS[3] Results...	Budgeted Cost		Actual Cost	Variance		Budgeted Cost		Actual Cost	Variance			Latest	
Item	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Work Scheduled	Work Performed	Work Performed	Schedule	Cost	Budgeted	Revised Estimate	Variance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
General and Administrative	0	0	0	0	0	0	0	0	0	0	0	0	0
Undistributed Budget											0	0	0
Sub Total	218	164	115	(54)	49	66,274	65,908	64,566	(367)	1,341	67,815	67,815	0
Contingency + MINOS Scope Reserve											3,414	3,414	0
Total NuMI Other Proj Costs	218	164	115	(54)	49	66,274	65,908	64,566	(367)	1,341	71,230	71,230	0
UK In-Kind Contribution	(6)	(1)	(1)	6	0	(4,803)	(4,802)	(4,802)	2	0	(5,272)	(5,272)	0
Minnesota Preconstruction Funds	0	0	0	0	0	(758)	(758)	(758)	0	0	(758)	(758)	0
Minnesota Construction Funds FY99	0	0	0	0	0	(3,000)	(3,000)	(3,000)	0	0	(3,000)	(3,000)	0
Total US Funds	212	163	114	(48)	49	57,713	57,348	56,007	(365)	1,341	62,200	62,200	0
WBS[2]Totals:													
Direct Cost + Escalation	201	149	102	(51)	47	43,641	43,264	42,203	(377)	1,061	44,895	44,895	0
Indirect Cost	17	15	12	(3)	2	2,497	2,507	2,464	11	43	2,784	2,784	0
Subtotal	218	164	115	(54)	49	46,138	45,771	44,666	(367)	1,105	47,679	47,679	0
UK In-Kind Contribution	(6)	(1)	(1)	6	0	(4,803)	(4,802)	(4,802)	2	0	(5,272)	(5,272)	0
Total MINOS Detector	212	163	114	(48)	49	41,335	40,970	39,865	(365)	1,105	42,407	42,407	0
Direct Cost + Escalation	0	0	0	0	0	19,502	19,502	19,253	0	249	19,502	19,502	0
Indirect Cost	0	0	0	0	0	634	634	646	0	(12)	634	634	0
Subtotal	0	0	0	0	0	20,136	20,136	19,900	0	237	20,136	20,136	0
Minnesota Preconstruction Funds	0	0	0	0	0	(758)	(758)	(758)	0	0	(758)	(758)	0
Minnesota Construction Funds FY99	0	0	0	0	0	(3,000)	(3,000)	(3,000)	0	0	(3,000)	(3,000)	0
Total Project Support	0	0	0	0	0	16,378	16,378	16,142	0	237	16,378	16,378	0
Contingency + MINOS Scope Reserve											3,414	3,414	0
Total US Funds	212	163	114	(48)	49	57,713	57,348	56,007	(365)	1,341	62,200	62,200	0

NuMI Other Project Costs

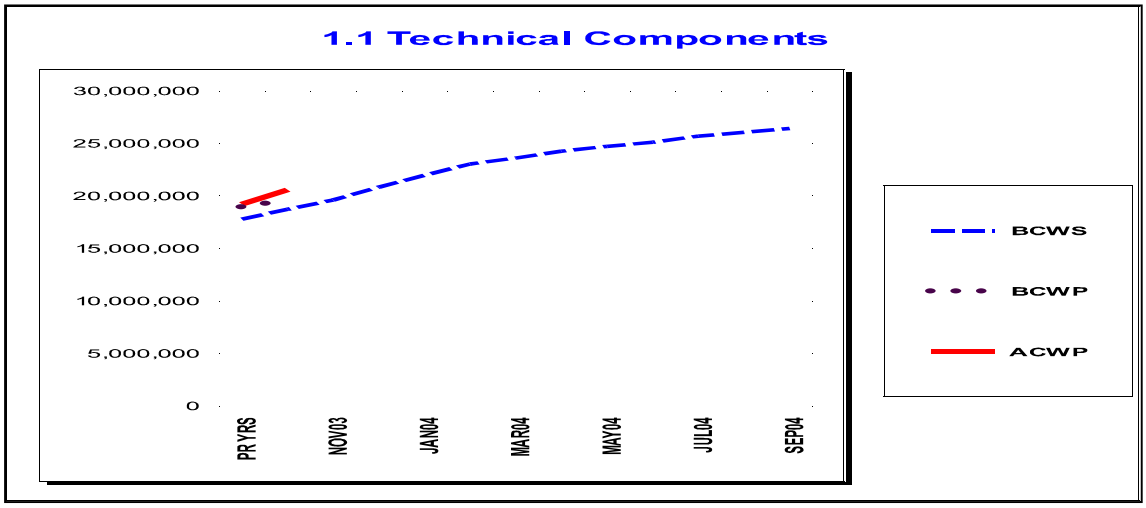
($000's Omitted)

Cost Performance Report - Baseline															
Contractor:	Fermi National Accelerator Laboratory			Contract Type/No:		Project Name/No:			Report Period:						
Location:	Batavia					NuMI Other Proj Costs			9/30/03					10/31/03	
(1) Original Contract Target Cost		(2) Negotiated Contract Changes		(3) Current Target Cost		(4) Est. Cost Authorized Authorized Unpriced Work			(5) Contract Budget Base (3) + (4)			(6) Total Allocated Budget		(7) Difference (5) - (6)	
62,200		0		62,200		0			62,200			62,200		0	
(8) Contract Start Date 10/1/97		(9) Contract Definitization Date 10/1/97				(10) Last Item Delivery Date 4/30/04			(11) Contract Completion Date 4/30/04			(12) Estimated Completion Date 4/30/04			

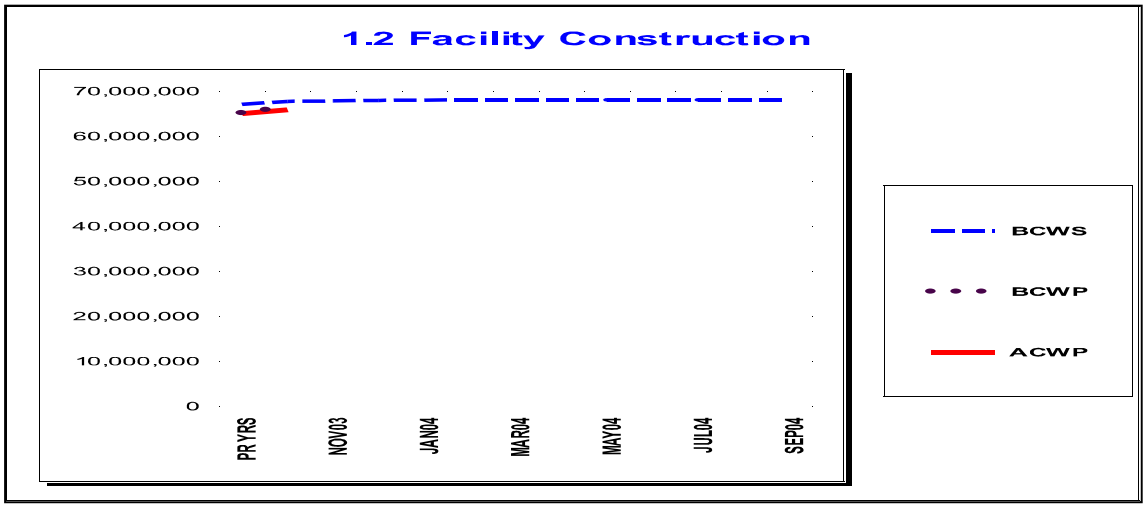
Item	BCWS Cum to Date	BCWS for Report Period	Budgeted Cost for Work Scheduled (Non-Cumulative) Six Month Forecast +1 NOV03	+2 DEC03	+3 JAN04	+4 FEB04	+5 MAR04	+6 APR04	(Enter Specific Periods) BAL FY04	FY05				Undist Budget	Total Budget
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
PM Baseline (Beginning of Period)	66,056	218	141	338	167	123	109	102	524	37	0	0	0	0	67,815
PM Baseline (End of Period)	66,274		141	338	167	123	109	102	524	37	0	0	0	0	67,815
Contingency + MINOS Scope Reserve															3,414
Total NuMI Other Project Costs															71,230
UK In-Kind Contribution															(5,272)
Minnesota Preconstruction Funds															(758)
Minnesota Preconstruction Funds FY99															(3,000)
Total US Funds															62,200

NuMI Project TEC

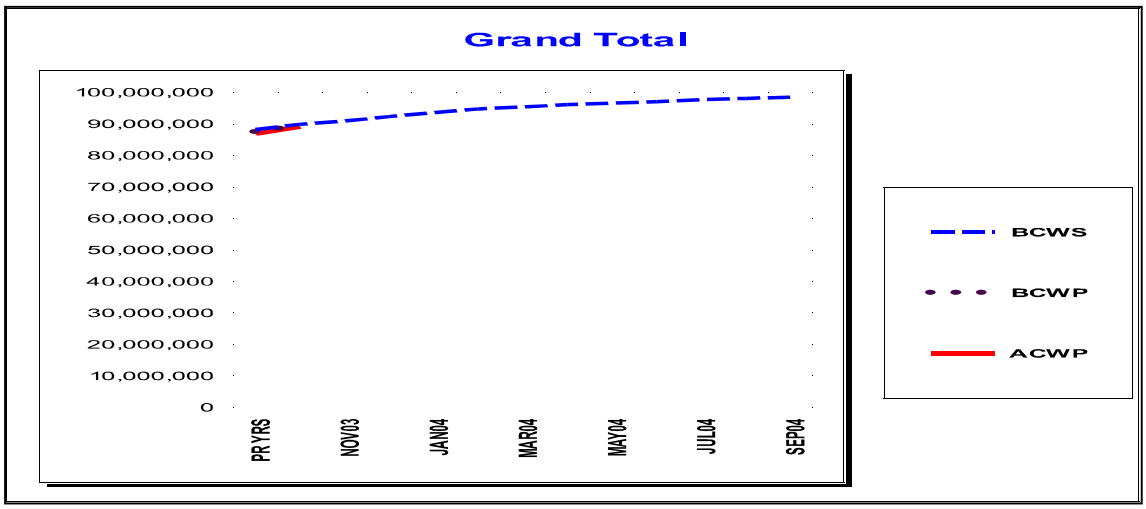
($000's Omitted)



	PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04
BCWS	17,780	18,712	19,604	20,826	21,954	23,029	23,595	24,247	24,712	25,103	25,681	26,045	26,400
BCWP	18,928	19,557											
ACWP	19,209	20,585											



	PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04
BCWS	67,035	67,697	67,793	67,911	67,988	68,045	68,047	68,047	68,047	68,047	68,047	68,047	68,047
BCWP	65,113	66,425											
ACWP	64,975	65,826											



	PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04
BCWS	88,156	89,808	90,847	92,244	93,504	94,687	95,312	96,020	96,538	96,984	97,617	98,037	98,447
BCWP	87,383	89,375											
ACWP	86,818	89,096											

NuMI Other Project Costs - US Funds

($000's Omitted)

Program:	Description:	Approval:
NUMIOPC	NuMI Other Proj Costs	Program Manager
Run Date: 11/13/03	Status Date: 10/31/2003	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
2.1 Magnets: Steel & Coils																
2.1.1 Steel Plane Fabrication	BCWS	4,628	1	0	0	0	0	0	0	0	0	0	0	0	0	4,629
	ACWP	4,601	0	0	0	0	0	0	0	0	0	0	0	0	0	4,601
2.1.2 Steel handling fixtures	BCWS	773	0	0	0	0	0	0	0	0	0	0	0	0	0	773
	ACWP	793	0	0	0	0	0	0	0	0	0	0	0	0	0	793
2.1.3 Near Detector Support Structures	BCWS	5	0	0	0	0	0	0	0	0	0	0	0	0	0	5
	ACWP	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
2.1.4 Magnet Coil	BCWS	1,562	0	0	0	0	0	0	0	0	0	0	0	0	0	1,562
	ACWP	1,673	0	0	0	0	0	0	0	0	0	0	0	0	0	1,673
2.1.5 Detector Plane Prototypes	BCWS	501	0	0	0	0	0	0	0	0	0	0	0	0	0	501
	ACWP	496	0	0	0	0	0	0	0	0	0	0	0	0	0	496
2.1.6 Steel Management	BCWS	71	0	0	0	0	0	0	0	0	0	0	0	0	0	71
	ACWP	57	0	0	0	0	0	0	0	0	0	0	0	0	0	57
WBS[2] Totals:	BCWS	7,539	1	0	0	0	0	0	0	0	0	0	0	0	0	7,540
	ACWP	7,622	0	0	0	0	0	0	0	0	0	0	0	0	0	7,622
2.2 Scintillator Detector Fabrication																
2.2.1 Scintillator Strips	BCWS	2,998	0	0	0	0	0	0	0	0	0	0	0	0	0	2,998
	ACWP	2,972	0	0	0	0	0	0	0	0	0	0	0	0	0	2,972
2.2.2 Fiber	BCWS	4,039	0	0	0	0	0	0	0	0	0	0	0	0	0	4,039
	ACWP	3,961	0	0	0	0	0	0	0	0	0	0	0	0	0	3,961
2.2.3 Scintillator Modules	BCWS	2,008	0	0	0	0	0	0	0	0	0	0	0	0	0	2,008
	ACWP	1,982	0	0	0	0	0	0	0	0	0	0	0	0	0	1,982
2.2.4 Photodetector Systems	BCWS	1,720	0	0	0	0	0	0	0	0	0	0	0	0	0	1,720
	ACWP	1,702	0	0	0	0	0	0	0	0	0	0	0	0	0	1,702
2.2.5 Mux Boxes & Connectors	BCWS	1,063	0	0	0	0	0	0	0	0	0	0	0	0	0	1,063
	ACWP	1,093	0	0	0	0	0	0	0	0	0	0	0	0	0	1,093
2.2.6 Calibration Systems	BCWS	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.7 Ass'y & Test Equipment	BCWS	1,729	0	0	0	0	0	0	0	0	0	0	0	0	0	1,729
	ACWP	1,721	0	0	0	0	0	0	0	0	0	0	0	0	0	1,721
2.2.8 Factories	BCWS	3,188	0	0	0	0	0	0	0	0	0	0	0	0	0	3,188
	ACWP	3,279	0	0	0	0	0	0	0	0	0	0	0	0	0	3,279
2.2.9 Scintillator Management	BCWS	355	0	0	0	0	0	0	0	0	0	0	0	0	0	355
	ACWP	379	0	0	0	0	0	0	0	0	0	0	0	0	0	379
WBS[2] Totals:	BCWS	17,104	0	0	0	0	0	0	0	0	0	0	0	0	0	17,104
	ACWP	17,089	0	0	0	0	0	0	0	0	0	0	0	0	0	17,089
2.3 Electronics, DAQ & Database																
2.3.1 Near Detector Front End	BCWS	4,545	30	24	28	27	24	1	4	4	5	5	5	5	5	4,712
	ACWP	4,175	40	0	0	0	0	0	0	0	0	0	0	0	0	4,215
2.3.2 Far Detector Front-end	BCWS	1,184	0	0	0	0	0	0	0	0	0	0	0	0	0	1,184
	ACWP	1,197	0	0	0	0	0	0	0	0	0	0	0	0	0	1,197
2.3.5 Database	BCWS	48	0	0	0	0	0	0	0	0	0	0	0	0	0	48
	ACWP	10	0	0	0	0	0	0	0	0	0	0	0	0	0	10
2.3.6 Auxilliary Systems	BCWS	202	0	0	0	0	0	0	0	0	0	0	0	0	0	206
	ACWP	247	1	0	0	0	0	0	0	0	0	0	0	0	0	248

NuMI Other Project Costs - US Funds

($000's Omitted)

Program:	Description:	Approval:
NUMIOPC	NuMI Other Proj Costs	Program Manager
Run Date: 11/13/03	Status Date: 10/31/2003	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
2.3.7 Electronics Management	BCWS	146	0	0	0	0	0	0	0	0	0	0	0	0	0	146
	ACWP	184	0	0	0	0	0	0	0	0	0	0	0	0	0	184
2.3.8 Slow Control & Monitoring	BCWS	445	0	0	0	0	0	0	0	0	0	0	0	0	0	445
	ACWP	373	0	0	0	0	0	0	0	0	0	0	0	0	0	373
2.3.9 HV System	BCWS	82	1	0	0	0	0	0	0	0	0	0	0	0	0	83
	ACWP	77	0	0	0	0	0	0	0	0	0	0	0	0	0	77
WBS[2] Totals:	BCWS	6,652	31	25	29	27	25	2	5	5	5	5	5	5	5	6,824
	ACWP	6,263	41	0	0	0	0	0	0	0	0	0	0	0	0	6,304
2.4 Far Detector Installation																
2.4.1 FDI Completed Design Tasks	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4.2 FDI Management	BCWS	661	0	0	0	0	0	0	0	0	0	0	0	0	0	661
	ACWP	577	5	0	0	0	0	0	0	0	0	0	0	0	0	582
2.4.3 SDN-FDI Construction Oversight	BCWS	58	0	0	0	0	0	0	0	0	0	0	0	0	0	58
	ACWP	115	0	0	0	0	0	0	0	0	0	0	0	0	0	115
2.4.4 FDI Soudan Lab Infrastructure Setup	BCWS	509	0	0	0	0	0	0	0	0	0	0	0	0	0	509
	ACWP	473	0	0	0	0	0	0	0	0	0	0	0	0	0	473
2.4.5 SDN-FDI Detector Installation	BCWS	3,084	0	0	0	0	0	0	0	0	0	0	0	0	0	3,084
	ACWP	2,759	0	0	0	0	0	0	0	0	0	0	0	0	0	2,759
2.4.6 SDN-FDI DNR Costs	BCWS	708	0	0	0	0	0	0	0	0	0	0	0	0	0	708
	ACWP	378	0	0	0	0	0	0	0	0	0	0	0	0	0	378
2.4.7 FDI Alignment & Survey	BCWS	57	0	0	0	0	0	0	0	0	0	0	0	0	0	57
	ACWP	67	0	0	0	0	0	0	0	0	0	0	0	0	0	67
WBS[2] Totals:	BCWS	5,077	0	0	0	0	0	0	0	0	0	0	0	0	0	5,077
	ACWP	4,369	5	0	0	0	0	0	0	0	0	0	0	0	0	4,374
2.5 Near Detector Installation																
2.5.1 NDI Infrastructure	BCWS	261	6	22	57	97	5	0	0	0	0	0	38	1	0	488
	ACWP	170	20	0	0	0	0	0	0	0	0	0	0	0	0	190
2.5.2 NDI Plane Assembly	BCWS	516	0	0	0	0	0	0	0	0	0	0	0	0	0	516
	ACWP	514	0	0	0	0	0	0	0	0	0	0	0	0	0	514
2.5.3 NDI Detector Installation	BCWS	9	5	20	197	30	90	104	95	90	98	100	94	65	32	1,031
	ACWP	39	0	0	0	0	0	0	0	0	0	0	0	0	0	40
2.5.4 NDI Facility Experimental Infrastructure	BCWS	78	64	18	0	0	0	0	0	0	0	0	0	0	0	160
	ACWP	124	9	0	0	0	0	0	0	0	0	0	0	0	0	134
2.5.5 RBI SB&O Experimental Systems Outfitting	BCWS	2,341	106	51	52	9	0	0	0	0	0	0	0	0	0	2,559
	ACWP	1,957	33	0	0	0	0	0	0	0	0	0	0	0	0	1,991
WBS[2] Totals:	BCWS	3,206	180	111	306	136	95	104	95	90	98	100	132	66	32	4,753
	ACWP	2,805	63	0	0	0	0	0	0	0	0	0	0	0	0	2,868
2.6 MINOS Project Management																
2.6.1 FNL-Project Management	BCWS	1,448	0	0	0	0	0	0	0	0	0	0	0	0	0	1,448
	ACWP	1,505	5	0	0	0	0	0	0	0	0	0	0	0	0	1,510
2.6.2 ANL-Project Management	BCWS	98	0	0	0	0	0	0	0	0	0	0	0	0	0	98
	ACWP	98	0	0	0	0	0	0	0	0	0	0	0	0	0	98
WBS[2] Totals:	BCWS	1,546	0	0	0	0	0	0	0	0	0	0	0	0	0	1,546
	ACWP	1,603	5	0	0	0	0	0	0	0	0	0	0	0	0	1,608

NuMI Other Project Costs - US Funds

($000's Omitted)

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		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
3.1 NuMI Conceptual Design																
3.1.1 FNL-BD-NuMI CDR	BCWS	489	0	0	0	0	0	0	0	0	0	0	0	0	0	489
	ACWP	487	0	0	0	0	0	0	0	0	0	0	0	0	0	487
3.1.2 FNL-BD-NuMI FESS CDR	BCWS	346	0	0	0	0	0	0	0	0	0	0	0	0	0	346
	ACWP	346	0	0	0	0	0	0	0	0	0	0	0	0	0	346
3.1.3 FNL-NuMI Beam Design	BCWS	798	0	0	0	0	0	0	0	0	0	0	0	0	0	798
	ACWP	796	0	0	0	0	0	0	0	0	0	0	0	0	0	796
3.1.4 FNL-BD-NuMI Project Management	BCWS	235	0	0	0	0	0	0	0	0	0	0	0	0	0	235
	ACWP	234	0	0	0	0	0	0	0	0	0	0	0	0	0	234
3.1.5 FNL-Soudan Lab Design	BCWS	65	0	0	0	0	0	0	0	0	0	0	0	0	0	65
	ACWP	65	0	0	0	0	0	0	0	0	0	0	0	0	0	65
WBS[2] Totals:	BCWS	1,934	0	0	0	0	0	0	0	0	0	0	0	0	0	1,934
	ACWP	1,928	0	0	0	0	0	0	0	0	0	0	0	0	0	1,928
3.2 MINOS Detector R&D																
3.2.1 FNL-MINOS Scintillator R&D	BCWS	995	0	0	0	0	0	0	0	0	0	0	0	0	0	995
	ACWP	988	0	0	0	0	0	0	0	0	0	0	0	0	0	988
3.2.2 FNL-MINOS Steel R&D	BCWS	649	0	0	0	0	0	0	0	0	0	0	0	0	0	649
	ACWP	644	0	0	0	0	0	0	0	0	0	0	0	0	0	644
3.2.3 FNL-RD-Neutrino Oscillation R&D	BCWS	136	0	0	0	0	0	0	0	0	0	0	0	0	0	136
	ACWP	136	0	0	0	0	0	0	0	0	0	0	0	0	0	136
WBS[2] Totals:	BCWS	1,780	0	0	0	0	0	0	0	0	0	0	0	0	0	1,780
	ACWP	1,768	0	0	0	0	0	0	0	0	0	0	0	0	0	1,768
3.3 MINOS Cavern																
3.3.0 Preconstruction Work	BCWS	758	0	0	0	0	0	0	0	0	0	0	0	0	0	758
	ACWP	758	0	0	0	0	0	0	0	0	0	0	0	0	0	758
3.3.1 Cavern Construction	BCWS	6,597	0	0	0	0	0	0	0	0	0	0	0	0	0	6,597
	ACWP	6,597	0	0	0	0	0	0	0	0	0	0	0	0	0	6,597
3.3.2 Cavern Outfitting	BCWS	7,171	0	0	0	0	0	0	0	0	0	0	0	0	0	7,171
	ACWP	7,171	0	0	0	0	0	0	0	0	0	0	0	0	0	7,171
WBS[2] Totals:	BCWS	14,527	0	0	0	0	0	0	0	0	0	0	0	0	0	14,527
	ACWP	14,527	0	0	0	0	0	0	0	0	0	0	0	0	0	14,527
3.4 Soudan/MINOS Operating																
3.4.1 UMN-Mine Crew Support/Soudan Gen'l Operations	BCWS	1,709	0	0	0	0	0	0	0	0	0	0	0	0	0	1,709
	ACWP	1,531	0	0	0	0	0	0	0	0	0	0	0	0	0	1,531
3.4.2 UMN-Breitung Township Building Rental	BCWS	114	0	0	0	0	0	0	0	0	0	0	0	0	0	114
	ACWP	75	0	0	0	0	0	0	0	0	0	0	0	0	0	75
3.4.3 UMN-E Peterson Salary	BCWS	73	0	0	0	0	0	0	0	0	0	0	0	0	0	73
	ACWP	71	0	0	0	0	0	0	0	0	0	0	0	0	0	71
WBS[2] Totals:	BCWS	1,896	0	0	0	0	0	0	0	0	0	0	0	0	0	1,896
	ACWP	1,677	0	0	0	0	0	0	0	0	0	0	0	0	0	1,677
Grand Totals:	BCWS	61,259	212	137	335	164	120	106	100	95	103	105	137	71	37	62,980
	ACWP	59,651	114	0	0	0	0	0	0	0	0	0	0	0	0	59,765

NuMI Other Project Costs - US Funds - Labor Only

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		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
2.1 Magnets: Steel & Coils																
2.1.1 Steel Plane Fabrication	BCWS	130	0	0	0	0	0	0	0	0	0	0	0	0	0	130
	ACWP	171	0	0	0	0	0	0	0	0	0	0	0	0	0	171
2.1.2 Steel handling fixtures	BCWS	437	0	0	0	0	0	0	0	0	0	0	0	0	0	437
	ACWP	560	0	0	0	0	0	0	0	0	0	0	0	0	0	560
2.1.3 Near Detector Support Structures	BCWS	36	0	0	0	0	0	0	0	0	0	0	0	0	0	36
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.1.4 Magnet Coil	BCWS	564	0	0	0	0	0	0	0	0	0	0	0	0	0	564
	ACWP	839	0	0	0	0	0	0	0	0	0	0	0	0	0	839
2.1.5 Detector Plane Prototypes	BCWS	355	0	0	0	0	0	0	0	0	0	0	0	0	0	355
	ACWP	375	0	0	0	0	0	0	0	0	0	0	0	0	0	375
2.1.6 Steel Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
WBS[2] Totals:	BCWS	1,521	0	0	0	0	0	0	0	0	0	0	0	0	0	1,522
	ACWP	1,946	0	0	0	0	0	0	0	0	0	0	0	0	0	1,946
2.2 Scintillator Detector Fabrication																
2.2.1 Scintillator Strips	BCWS	111	0	0	0	0	0	0	0	0	0	0	0	0	0	111
	ACWP	344	0	0	0	0	0	0	0	0	0	0	0	0	0	344
2.2.2 Fiber	BCWS	8	0	0	0	0	0	0	0	0	0	0	0	0	0	8
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.3 Scintillator Modules	BCWS	11	0	0	0	0	0	0	0	0	0	0	0	0	0	11
	ACWP	284	0	0	0	0	0	0	0	0	0	0	0	0	0	284
2.2.5 Mux Boxes & Connectors	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	37	0	0	0	0	0	0	0	0	0	0	0	0	0	37
2.2.6 Calibration Systems	BCWS	3	0	0	0	0	0	0	0	0	0	0	0	0	0	3
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.7 Ass'y & Test Equipment	BCWS	9	0	0	0	0	0	0	0	0	0	0	0	0	0	9
	ACWP	139	0	0	0	0	0	0	0	0	0	0	0	0	0	139
2.2.8 Factories	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.2.9 Scintillator Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	144	0	0	0	0	0	0	0	0	0	0	0	0	0	144
	ACWP	805	0	0	0	0	0	0	0	0	0	0	0	0	0	805
2.3 Electronics, DAQ & Database																
2.3.1 Near Detector Front End	BCWS	356	15	13	15	15	13	1	0	0	0	0	0	0	0	428
	ACWP	652	15	0	0	0	0	0	0	0	0	0	0	0	0	667
2.3.2 Far Detector Front-end	BCWS	112	0	0	0	0	0	0	0	0	0	0	0	0	0	112
	ACWP	176	0	0	0	0	0	0	0	0	0	0	0	0	0	176
2.3.6 Auxilliary Systems	BCWS	97	0	0	0	0	0	0	0	0	0	0	0	0	0	102
	ACWP	166	1	0	0	0	0	0	0	0	0	0	0	0	0	167
2.3.7 Electronics Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

NuMI Other Project Costs - US Funds - Labor Only

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		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
2.3.8 Slow Control & Monitoring	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.3.9 HV System	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	566	16	14	16	15	14	1	0	0	0	0	0	0	0	643
	ACWP	993	16	0	0	0	0	0	0	0	0	0	0	0	0	1,009
2.4 Far Detector Installation																
2.4.1 FDI Completed Design Tasks	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2.4.2 FDI Management	BCWS	89	0	0	0	0	0	0	0	0	0	0	0	0	0	89
	ACWP	47	0	0	0	0	0	0	0	0	0	0	0	0	0	47
2.4.4 FDI Soudan Lab Infrastructure Setup	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7
2.4.7 FDI Alignment & Survey	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	89	0	0	0	0	0	0	0	0	0	0	0	0	0	89
	ACWP	54	0	0	0	0	0	0	0	0	0	0	0	0	0	54
2.5 Near Detector Installation																
2.5.1 NDI Infrastructure	BCWS	161	2	16	48	94	5	0	0	0	0	0	38	1	0	365
	ACWP	101	17	0	0	0	0	0	0	0	0	0	0	0	0	118
2.5.2 NDI Plane Assembly	BCWS	501	0	0	0	0	0	0	0	0	0	0	0	0	0	501
	ACWP	468	0	0	0	0	0	0	0	0	0	0	0	0	0	468
2.5.3 NDI Detector Installation	BCWS	3	0	13	16	21	82	94	89	84	92	94	88	59	20	756
	ACWP	11	0	0	0	0	0	0	0	0	0	0	0	0	0	11
2.5.4 NDI Facility Experimental Infrastructure	BCWS	27	5	4	0	0	0	0	0	0	0	0	0	0	0	37
	ACWP	17	0	0	0	0	0	0	0	0	0	0	0	0	0	18
2.5.5 RBI SB&O Experimental Systems Outfitting	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	692	7	33	64	116	87	94	89	84	92	94	126	60	20	1,659
	ACWP	596	17	0	0	0	0	0	0	0	0	0	0	0	0	613
2.6 MINOS Project Management																
2.6.1 FNL-Project Management	BCWS	1,398	0	0	0	0	0	0	0	0	0	0	0	0	0	1,398
	ACWP	1,356	5	0	0	0	0	0	0	0	0	0	0	0	0	1,361
2.6.2 ANL-Project Management	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	1,398	0	0	0	0	0	0	0	0	0	0	0	0	0	1,398
	ACWP	1,356	5	0	0	0	0	0	0	0	0	0	0	0	0	1,361
3.1 NuMI Conceptual Design																
3.1.1 FNL-BD-NuMI CDR	BCWS	99	0	0	0	0	0	0	0	0	0	0	0	0	0	99
	ACWP	99	0	0	0	0	0	0	0	0	0	0	0	0	0	99
3.1.2 FNL-BD-NuMI FESS CDR	BCWS	112	0	0	0	0	0	0	0	0	0	0	0	0	0	112
	ACWP	112	0	0	0	0	0	0	0	0	0	0	0	0	0	112

NuMI Other Project Costs - US Funds - Labor Only

($000's Omitted)

Program:	Description:	Approval:
NUMIOPC	NuMI Other Proj Costs	Program Manager
Run Date: 11/13/03	Status Date: 10/31/2003	Functional Manager
		Cost Account Manager

DESCRIPTION		PR YRS	OCT03	NOV03	DEC03	JAN04	FEB04	MAR04	APR04	MAY04	JUN04	JUL04	AUG04	SEP04	FY05	TOTAL
3.1.3 FNL-NuMI Beam Design	BCWS	530	0	0	0	0	0	0	0	0	0	0	0	0	0	530
	ACWP	529	0	0	0	0	0	0	0	0	0	0	0	0	0	529
3.1.4 FNL-BD-NuMI Project Management	BCWS	132	0	0	0	0	0	0	0	0	0	0	0	0	0	132
	ACWP	132	0	0	0	0	0	0	0	0	0	0	0	0	0	132
3.1.5 FNL-Soudan Lab Design	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	872	0	0	0	0	0	0	0	0	0	0	0	0	0	872
	ACWP	872	0	0	0	0	0	0	0	0	0	0	0	0	0	872
3.2 MINOS Detector R&D																
3.2.1 FNL-MINOS Scintillator R&D	BCWS	7	0	0	0	0	0	0	0	0	0	0	0	0	0	7
	ACWP	6	0	0	0	0	0	0	0	0	0	0	0	0	0	6
3.2.2 FNL-MINOS Steel R&D	BCWS	46	0	0	0	0	0	0	0	0	0	0	0	0	0	46
	ACWP	46	0	0	0	0	0	0	0	0	0	0	0	0	0	46
3.2.3 FNL-RD-Neutrino Oscillation R&D	BCWS	9	0	0	0	0	0	0	0	0	0	0	0	0	0	9
	ACWP	9	0	0	0	0	0	0	0	0	0	0	0	0	0	9
WBS[2] Totals:	BCWS	62	0	0	0	0	0	0	0	0	0	0	0	0	0	62
	ACWP	62	0	0	0	0	0	0	0	0	0	0	0	0	0	62
3.4 Soudan/MINOS Operating																
3.4.1 UMN-Mine Crew Support/Soudan Gen'l Operations	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
3.4.2 UMN-Breitung Township Building Rental	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
WBS[2] Totals:	BCWS	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	ACWP	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Totals:	BCWS	5,345	23	47	80	130	100	96	89	85	92	95	126	60	20	6,389
	ACWP	6,686	38	0	0	0	0	0	0	0	0	0	0	0	0	6,723

NuMI Project Obligations

$000's Omitted

Wk Pkg	WBS #	Inst Code	DESCRIPTION	Amounts as of October 31, 2003 Total Budget	PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
YAA	1.1.1.1		EPB/Physics Design Phase	135	139			139	(3)
YAB	1.1.1.2		EPB/Title I & II Design Phase	981	959	47		1,006	(26)
YAC	1.1.1.3.1		EPB/Title III	83	105			105	(22)
YAD	1.1.1.3.2.1		EPB/Fabrication	1,359	1,072	153	11	1,236	123
YAE	1.1.1.3.2.2		EPB/Assembly	522	415	0		415	107
YAG	1.1.1.3.2.3		EPB/Lambertston Construction	448	402	64		466	(18)
YAH	1.1.1.3.2.4		EPB/Refurbish & Repair B2 Magnets	123	124			124	(1)
YAK	1.1.1.3.2.5		EPB/Refurbish & Repair 3Q120 Magnets	108	83			83	25
YAL	1.1.1.3.2.6		EPB/Fabricate Add'l Trim Magnets	211	338			338	(127)
YAM	1.1.1.3.2.7		EPB/Refurbish 5.5 - 2.87 - 60 Trim Dipoles	20	20			20	0
YAF	1.1.1.3.3		EPB/Installation	370	650	59		710	(340)
	1.1.1.3.4		EPB/Precommissioning	0	0			0	0
YAI	1.1.1.4		EPB/Beamline Tests	32	18	6	2	26	5
YAJ	1.1.1.5		EPB/Controls Software & Permit	44	2			2	42
YBA	1.1.2.1		NBD/Physics Design Phase	799	781	0		781	19
YBB	1.1.2.2		NBD/Title I & II Design Phase	4,550	4,747	4		4,751	(201)
YBC	1.1.2.3.1		NBD/Title III	49	43			43	5
YBD	1.1.2.3.2		NBD/Construction	2,708	2,487	187		2,674	35
	1.1.2.3.3		NBD/Installation	102	24	40		64	37
	1.1.2.3.4		NBD/Precommissioning	0	0			0	0
YCA	1.1.3.1		PSS/Physics Design Phase	0	0			0	0
YCB	1.1.3.2		PSS/Title I & II Design Phase	1,626	1,641	2		1,643	(17)
YCC	1.1.3.3.1		PSS/Title III	37	32			32	5
YCD	1.1.3.3.2		PSS/Construction & Fabrication	2,322	2,355	45		2,399	(77)
YCE	1.1.3.3.3		PSS/Installation	82	153	33		185	(103)
	1.1.3.3.4		PSS/Precommissioning	0	0			0	0
YDA	1.1.4.1		HDA/Physics Design Phase	60	60			60	0
YDB	1.1.4.2		HDA/Title I & II Design Phase	484	480			480	4
YDC	1.1.4.3.1		HDA/Title III	11	9			9	2
	1.1.4.3.2.1		HDA/Misc Construction Materials	0	0			0	0
YDE	1.1.4.3.2.2		HDA/Absorber Construction	543	141	(0)		141	402
YDF	1.1.4.3.2.3		HDA/Vacuum Window Construction	25	31			31	(6)
	1.1.4.3.2.4		HDA/Installation	0	0			0	0
YEA	1.1.5.1		NBM/Physics Design Phase	80	80			80	0
YEB	1.1.5.2		NBM/Title I & II Design Phase	307	182	117		299	9

NuMI Project Obligations

$000's Omitted

Wk Pkg	WBS #	Inst Code	DESCRIPTION	Amounts as of October 31, 2003 Total Budget	PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
	1.1.5.3.1		NBM/Title III	0	0			0	0
	1.1.5.3.2		NBM/Construction	0	0			0	0
	1.1.5.3.3		NBM/Installatior	0	0			0	0
YEF	1.1.5.4		NBM/Downstream Hadron Monitors	97	52	43		95	2
YFA	1.1.6.1		ALS/Physics Design Phase	89	89			89	0
YFB	1.1.6.2		ALS/Title I & II Design Phase	9	9			9	0
YFC	1.1.6.3.1		ALS/Prepare Alignment Documentation	2	2			2	0
YFE	1.1.6.3.3		ALS/Title III	79	80	1		80	(1)
YFF	1.1.6.3.4		ALS/Installation	7	11			11	(4)
YGA	1.1.7.1		WVG/Physics Design Phase	1	1			1	0
YGB	1.1.7.2		WVG/Title I & II Design Phase	466	502			502	(36)
YGC	1.1.7.3.1		WVG/Title III	25	16	76	2	93	(68)
YGD	1.1.7.3.2		WVG/Construction	1,041	914			914	127
	1.1.7.3.3		WVG/Installation	19	0			0	19
YHA	1.1.8.1		INST/Physics Design Phase	50	50			50	0
YHB	1.1.8.2		INST/Title I & II Design Phase	153	150			150	3
YHC	1.1.8.3.1		INST/Title III	127	211			211	(84)
YHD	1.1.8.3.2		INST/Controls, Cables & Safety Systems Construction	200	238	1		238	(38)
YHE	1.1.8.3.3		INST/Controls, Cables & Safety Systems Installation	535	590	36	38	663	(128)
YHF	1.1.8.3.4		INST/Miscellaneous Installation Activities	75	37	39		76	(1)
	1.1.8.3.5		INST/Precommission Controls, Cables & Safety Systems		0			0	0
	1.1.8.4		INST/Moveable Shield Wall for the Target Hall	0	0		6	6	(6)
YJA	1.1.9		Hadronic Hose (Close-out)	63	63			63	0
YIA	1.2.1		Facility Const Physics Design Phase	70	70			70	0
YIB	1.2.2		Facility Const Title I Design Phase	1,437	1,437			1,437	0
YIC	1.2.3		Facility Const Title II Design Phase	2,974	2,974			2,974	0
YID	1.2.4.2		Facility Const Title III Services	6,453	6,286	43		6,328	125
YIE	1.2.4.3		Site Preparation & Utilities	1,098	1,093			1,093	5
YIF	1.2.4.4		Underground Work	35,516	35,492	19		35,511	6
YIG	1.2.4.5		Service Buildings & Outfitting	16,792	14,603	2,174	534	17,312	(519)
YII	1.2.4.7		FNL Procurements for Conventional Construction	617	415			415	203
YIL	1.2.4.8.1		Facility Const ESH&H	676	683	0		684	(8)
YIM	1.2.4.8.2		Facility Const FESS Non-Engineering	280	291			291	(11)
YIN	1.2.4.8.3		Facility Const UG Advisory Panel	1,303	1,226			1,226	77
YIO	1.2.4.8.4		Facility Const Miscellaneous	218	203	69		272	(54)
YIP	1.2.4.8.5		Facility Const Prebid Document Update	1,056	1,051	5		1,056	(0)

NuMI Project Obligations

$000's Omitted

Wk Pkg	WBS #	Inst Code	DESCRIPTION	Amounts as of October 31, 2003 Total Budget	PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
YKA	1.3.1		FY 98 Project Management	141	141			141	0
YKB	1.3.2		FY 99 Project Management	661	661			661	0
YKC	1.3.3		FY00 Project Management	663	663			663	0
YKD	1.3.4		FY01 Project Management	423	423			423	0
YKE	1.3.5		FY02 Project Management	324	324			324	(0)
YKF	1.3.6		FY03 Project Management	428	421			421	7
	1.3.7		FY04 Project Management	0	52			52	(52)
YKZ	1.3.9		Unallocated Budget	3,596	0			0	3,596
YQF	2.1.1.1.1	FNL	EDI&A Far Detector Final Design	70	70			70	0
YQG	2.1.1.1.2	FNL	EDI&A Near Detector Final Design	41	41			41	0
YQA	2.1.1.1.99	FNL	EDI&A Steel Plane Fabrication	0	0			0	0
YQH	2.1.1.1.3.1	FNL	EDI&A Oversight	67	67			67	0
YQI	2.1.1.1.3.2	UMN	EDI&A Oversight	36	36			36	0
YQB	2.1.1.2	FNL	4 Plane Proto Far & Near	79	79			79	0
YQC	2.1.1.3	FNL	Module 1 Steel	1,740	1,740	1		1,740	0
YQD	2.1.1.4	FNL	Module 2 Steel	1,794	1,722	72		1,794	0
YQE	2.1.1.6	FNL	Near Steel	845	845	0		845	0
YQM	2.1.2.1	FNL	EDI&A Steel Handling Fixtures	424	424			424	0
YQN	2.1.2.2	FNL	Far Detector Fixtures	177	177			177	0
YQO	2.1.2.3	FNL	Near Detector Fixtures	192	192			192	0
YQS	2.1.3.1	FNL	EDI&A Near Detector Support Structures	1	1			1	0
	2.1.3.2	FNL	Purchase Near Detector Support Structures	0	0			0	0
	2.1.3.3	FNL	Purchase Near Bookend	0	0			0	0
YQY	2.1.4.1	FNL	EDI&A Magnet Coil	527	527			527	0
YQZ	2.1.4.2	FNL	Coil Materials - Far Detector	329	329	0		329	0
YRA	2.1.4.3	FNL	Coil Materials - Near Detector	76	76			76	0
YRB	2.1.4.4	FNL	Cooling System - Far Detector	5	5			5	0
YRI	2.1.4.5	FNL	Coil Fixtures - Near Detector	32	32			32	0
YRC	2.1.4.6.1	FNL	Instrumentation/Monitoring-Far Detector	142	142			142	0
YRH	2.1.4.6.2	UMN	Instrumentation/Monitoring-Far Detector	63	63			63	0
YRD	2.1.4.6.99	FNL	Instrumentation/Monitoring-Far Detector	0	0			0	0
YRE	2.1.4.7	FNL	Instrumentation/Monitoring-Near Detector	33	33			33	0
YRF	2.1.4.8	FNL	Manufacture Near Coil Parts	302	302			302	0
YRG	2.1.4.9	FNL	Far Coil Prototype	165	165	0		165	0
YRM	2.1.5.1	FNL	EDI&A Detector Plane Prototypes	35	35			35	0
YRN	2.1.5.2	FNL	Far 4 Plane Proto	197	197			197	0

NuMI Project Obligations

$000's Omitted

Wk Pkg	WBS #	Inst Code	DESCRIPTION	Amounts as of October 31, 2003 Total Budget	PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
YRO	2.1.5.3	FNL	Far 4 Plane Training School	10	10			10	0
YRP	2.1.5.4	FNL	Materials Handling Prototype	115	115			115	0
YRQ	2.1.5.5	FNL	Near 4 Plane Prototype	138	138			138	0
	2.1.5.6	FNL	Near 4 Plane Training School	0	0			0	0
YRW	2.1.6.1	FNL	Steel Mgmt Travel	57	57			57	0
YSA	2.2.1.1.1	FNL	EDI&A Scintillator Strips	375	375			375	0
YSB	2.2.1.1.2	ANL	EDI&A Scintillator Strips	188	188			188	0
YSC	2.2.1.1.3	UMN	EDI&A Scintillator Strips	16	16			16	0
YSD	2.2.1.1.4	CALT	EDI&A Scintillator Strips	60	60			60	0
YSL	2.2.1.1.6	TUF	EDI&A Scintillator Strips	7	7			7	0
YSP	2.2.1.2.1	ANL	Scintillator Strip Extruding	0	0			0	0
YTB	2.2.1.2.3	FNL	Scintillator Strip Extruding	2,343	2,325	18		2,343	0
YSE	2.2.2.1.2	IU	EDI&A Fiber	91	91			91	0
YSF	2.2.2.1.3	UMN	EDI&A Fiber	32	32			32	0
YSG	2.2.2.1.5	FNL	EDI&A Fiber	99	99			99	0
YSH	2.2.2.1.6	CALT	EDI&A Fiber	87	86	1		87	0
YSQ	2.2.2.2.1	CALT	Fiber M&S	1,272	1,272			1,272	0
YUK	2.2.2.2.2	TAMU	Fiber M&S	123	123			123	0
YST	2.2.2.2.4	IU	Fiber M&S	2,157	2,157			2,157	0
YUN	2.2.2.2.5	JMU	Fiber M&S	103	103			103	0
YSJ	2.2.3.1.1	UMN	EDI&A Module Design & Prototyping	305	302	3		305	0
YSI	2.2.3.1.2	ANL	EDI&A Module Design & Prototyping	46	46			46	0
YSK	2.2.3.1.3	FNL	EDI&A Module Design & Prototyping	153	153			153	0
	2.2.3.1.4	IU	EDI&A Module Design & Prototyping	0	0			0	0
YSM	2.2.3.1.5	CALT	EDI&A Module Design & Prototyping	9	9			9	0
YSN	2.2.3.1.6	TUF	EDI&A Module Design & Prototyping	4	4			4	0
YUO	2.2.3.2	UMN	Scintillator Module Parts - Near Detector	54	54	0		54	0
YSW	2.2.3.3.1	FNL	Scintillator Module Parts - Far Detector	1,104	1,080	24		1,104	0
YTF	2.2.3.3.2	TUF	Scintillator Module Parts - Far Detector	74	74			74	0
YUS	2.2.3.4	FNL	Scintillator Module Parts	261	261			261	0
YSO	2.2.4.1.2	TXA	EDI&A Photodetector Systems	124	124			124	0
YSX	2.2.4.2.1	TXA	Photodetectors	1,355	1,355			1,355	0
YUL	2.2.4.2.3	ATH	Photodetectors	23	23			23	0
YSY	2.2.4.3.1	TXA	PMT Bases and Mounting for SM1	200	200			200	0
YUP	2.2.4.3.2	UCL	PMT Bases and Mounting for SM2	0	0			0	0
YSU	2.2.5.1.2	IU	EDI&A Mux Boxes & Connectors	89	89			89	0

NuMI Project Obligations

$000's Omitted

Wk Pkg	WBS #	Inst Code	DESCRIPTION	Amounts as of October 31, 2003 Total Budget	PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
YSV	2.2.5.1.4	FNL	EDI&A Mux Boxes & Connectors	46	46			46	0
YSZ	2.2.5.1.5	IU	QC LED Computer System	31	31			31	0
YSR	2.2.5.2.1	IU	Connectors	159	159			159	0
YUM	2.2.5.2.3	FNL	Connectors	11	10	0		11	0
YWJ	2.2.5.2.4	FNL	Connectors - Rework	30	30			30	0
YSS	2.2.5.3.1	IU	Mux Boxes	447	447			447	0
YUQ	2.2.5.3.2	TUF	Mux Boxes	225	225			225	0
YUG	2.2.5.3.4	TXA	Mux Boxes	56	56			56	0
YTA	2.2.6.1.1	FNL	EDI&A Calibration Systems	0	0			0	0
	2.2.6.3.1	FNL	Light Injection System - Near Detector	0	0			0	0
YTK	2.2.7.1.1	ANL	EDI&A Ass'y & Test Equipment	243	243			243	0
YTJ	2.2.7.1.2	FNL	EDI&A Ass'y & Test Equipment	35	35			35	0
YTN	2.2.7.1.3	UMN	EDI&A Ass'y & Test Equipment	47	47			47	0
YTM	2.2.7.2.1.1	ANL	Prototype Factory Equip Purch/Fabr	255	255			255	0
YTO	2.2.7.2.1.2	UMN	Prototype Factory Equip Purch/Fabr	22	22			22	0
YTL	2.2.7.2.1.3	FNL	Prototype Factory Equip Purch/Fabr	152	152			152	0
YTP	2.2.7.2.2.1	ANL	Factory 1 Equip Purch/Fabr	217	217			217	0
YTI	2.2.7.2.2.2	CALT	Factory 1 Equip Purch/Fabr	103	103			103	0
YTQ	2.2.7.2.2.3	FNL	Factory 1 Equip Purch/Fabr	25	25			25	0
YTC	2.2.7.2.2.4	UMN	Factory 1 Equip Purch/Fabr	57	57			57	0
YTG	2.2.7.2.3.1	ANL	Factory 2 Equip Purch/Fabr	307	307			307	0
	2.2.7.2.3.2	FNL	Factory 2 Equip Purch/Fabr	0	0			0	0
YTD	2.2.7.2.3.3	UMN	Factory 2 Equip Purch/Fabr	165	165	0		165	0
YUT	2.2.7.2.4.1	ANL	Equip for Soudan Purch/Fabr	31	31			31	0
	2.2.7.2.4.2	FNL	Equip for Soudan Purch/Fabr	0	0			0	0
YUH	2.2.7.2.4.3	UMN	Equip for Soudan Purch/Fabr	0	0			0	0
	2.2.7.2.5.1	FNL	Near Detector Site Equip Purch/Fabr	0	0			0	0
YTE	2.2.7.2.6.1	ANL	Other Equipment	61	61			61	0
YUI	2.2.7.2.6.3	UMN	Other Equipment	0	0			0	0
YTT	2.2.8.1	ANL	EDI&A Factories	28	28			28	0
YTR	2.2.8.2	CALT	Factories Ass'y Line Outfitting 1	164	164			164	0
YTS	2.2.8.3	UMN	Factories Ass'y Line Outfitting 2	172	172			172	0
YTU	2.2.8.4.1	CALT	Module Production	1,251	1,251			1,251	0
YUU	2.2.8.4.2	UMN	Module Production	1,164	1,164	0		1,164	0
YUV	2.2.8.4.3	ANL	Near Detector Production	500	500			500	0
YTW	2.2.9.1.1	FNL	Scintillator Mgmt Salaries	3	3			3	0

NuMI Project Obligations

$000's Omitted

Wk Pkg	WBS #	Inst Code	DESCRIPTION	Amounts as of October 31, 2003 Total Budget	PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
YTV	2.2.9.1.2	ANL	Scintillator Mgmt Salaries	101	101			101	0
YTX	2.2.9.1.3	UMN	Scintillator Mgmt Salaries	60	60			60	0
YUJ	2.2.9.2.1	FNL	Scintillator Mgmt Travel	0	0			0	0
YTH	2.2.9.2.2	ANL	Scintillator Mgmt Travel	27	27			27	0
YTZ	2.2.9.2.3	CALT	Scintillator Mgmt Travel	149	149	0		149	0
YTY	2.2.9.2.4	UMN	Scintillator Mgmt Travel (Paid by FNL)	39	39			39	0
YUA	2.3.1.1.1	ANL	EDI&A Near Detector Front End	897	897			897	0
YUB	2.3.1.1.2	FNL	EDI&A Near Detector Front End	570	569	0		570	0
YWF	2.3.1.1.3	IIT	EDI&A Near Detector Front End	96	96			96	0
YUW	2.3.1.2.1	ANL	Parts Order and Assembly NDFE	513	477	37		513	0
YUD	2.3.1.2.2	FNL	Parts Order and Assembly NDFE	2,128	2,124	4		2,128	0
YWG	2.3.1.3.1	ANL	Production Checkout NDFE	123	0	123		123	0
YWH	2.3.1.3.2	FNL	Production Checkout NDFE	54	52	2		54	0
YWI	2.3.1.4	ANL	Installation NDFE	0	0			0	0
YUC	2.3.2.1.2	HVD	EDIA Far Detector Front End	351	351			351	0
YUE	2.3.2.1.3	FNL	EDIA Far Detector Front End	121	121			121	0
YUX	2.3.2.2.2	HVD	Parts Order and Assembly FDFE	399	399			399	0
YUF	2.3.2.2.3	FNL	Parts Order and Assembly FDFE	297	297			297	0
YUY	2.3.2.3.1	HVD	Production Checkout FDFE	29	29			29	0
	2.3.2.3.2	FNL	Production Checkout FDFE	0	0			0	0
	2.3.2.4.1	ANL	Installation FDFE	0	0			0	0
YVM	2.3.5.1	UMN	EDIA Database	0	0			0	0
YVN	2.3.5.2	UMN	Database Purchase & Programming	10	10	0		10	0
YUZ	2.3.6.2.2	FNL	Clock Distribution System	225	224	0		225	0
YVT	2.3.6.4	IIT	Auxiliary Systems	24	24			24	0
YVV	2.3.7.1	ANL	Electronics Mgmt Travel	47	47			47	0
YVA	2.3.7.2	ANL	NDFE Electronics Level 3 Manager	171	137	34		171	0
YVX	2.3.8.2.1	FNL	Procurement and Assembly	36	36			36	0
YVY	2.3.8.2.2	UMN	Procurement and Assembly	360	337	23		360	0
YVZ	2.3.9.3	TAMU	HV System	4	4			4	0
YWD	2.3.9.4	FNL	HV System	73	73			73	0
	2.4.1.1	SDN	FDI Completed Design Tasks	0	0			0	0
YWB	2.4.1.1.2	FNL	EDI&A FDI Infrastucture	0	0			0	0
	2.4.1.2	FNL	FDI Soudan Completed Design Tasks	0	0			0	0
YVB	2.4.2.1	SDN	FDI Minecrew Management	301	300	0		301	0
YVK	2.4.2.2	FNL	FDI Minecrew Management	233	232	1		233	0

NuMI Project Obligations

$000's Omitted

Wk Pkg	WBS #	Inst Code	DESCRIPTION	Amounts as of October 31, 2003 Total Budget	PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
YVU	2.4.2.4	TAMU	FDI Minecrew Management	49	49			49	0
YVC	2.4.3	SDN	FDI MINOS Construction Oversight	115	115			115	0
YVD	2.4.4.1	SDN	FDI Soudan Lab Infrastructure Setup	452	451	2		452	0
YWC	2.4.4.2	FNL	FDI Soudan Lab Infrastructure Setup	22	22			22	0
YVE	2.4.5	SDN	FDI Labor Costs	2,959	2,759	200		2,959	0
YVF	2.4.6	SDN	FDI DNR Costs	378	378	0		378	0
YVG	2.4.7.1	SDN	FDI Purchases & Setup	0	0			0	0
YVI	2.4.7.2	FNL	FDI Alignment & Survey	69	67	1		69	0
YXA	2.5.1.1	FNL	NDI Infrastrucure EDI&A	47	47			47	0
YVL	2.5.1.2.1	FNL	NDI Install Support Structure	3	3			3	0
YVO	2.5.1.2.2	FNL	NDI Install Racks	124	123	1		124	0
	2.5.1.2.3	FNL	NDI NHI Install LCW System	17	16	1		17	0
YVP	2.5.1.2.6	FNL	NDI Install Coil Power Supply	1	1			1	0
YWE	2.5.2.1.2	IIT	NDI Plane Assembly EDI&A	10	10			10	0
YVJ	2.5.2.2	FNL	NDI New Muon Assembly Area Setup	161	161			161	0
YVW	2.5.2.3	FNL	NDI Assembly of Detector Planes-One Shift	342	342			342	0
	2.5.3.1	FNL	NDI Detector Installation EDI&A	2	2			2	0
	2.5.3.2	FNL	NDI Hall Tech Area Setup	96	7	89		96	0
	2.5.3.3	FNL	NDI Spectrometer Plane Installation	0	0			0	0
	2.5.3.4	FNL	NDI Calorimeter Plane Installation	0	0			0	0
YVR	2.5.3.5	FNL	NDI Detector Electronics Installation	31	31			31	0
YVS	2.5.3.6	FNL	NDI Magnet Coil Installation	0	0			0	0
	2.5.4		NDI Facility Experimental Infrastructure	217	134	0	83	217	0
YWL	2.5.5	RBI	NDI SB&O Experimental Systems Outfitting	2,602	1,991	599	12	2,602	0
YYA	2.6.1	FNL	Project Management	1,510	1,510			1,510	0
YYB	2.6.2	ANL	Project Management	98	98			98	0
YZA	3.1.1	FNL	BD-NuMI CDR	487	487			487	0
YZB	3.1.2	FNL	BD-NuMI FESS CDR	346	346			346	0
YZC	3.1.3.1	FNL	BD-NuMI Beam (FNAL)	555	555			555	0
YZD	3.1.3.2	FNL	BD-NuMI Beam E&D (IHEP)	241	241			241	0
YZE	3.1.4	FNL	BD-NuMI Project Management	234	234			234	0
YZV	3.1.5	FNL	NuMI-Soudan Lab CDR	65	65			65	0
YZF	3.2.1	FNL	MINOS Scintillator R&D	988	988			988	0
YZG	3.2.2	FNL	MINOS Steel R&D	644	644			644	0
YZH	3.2.3	FNL	RD-Neutrino Oscillation R&D	136	136			136	0
	3.3	SDN-CONST	MINOS Cavern	10,769	0	10,769		10,769	0

NuMI Project Obligations

$000's Omitted

Wk Pkg	WBS #	Inst Code	DESCRIPTION	Amounts as of October 31, 2003 Total Budget	PTD Cost	PO Encumbrances	Requisition Encumbrances	PTD Obligations	Remaining Obligation Authority
YZU	3.4.1	SDN-OPER	NuMI-Mine Crew Support/Soudan Gen'l Operations	1,531	1,531	0		1,531	0
YZX	3.4.2	SDN-OPER	NuMI-Breitung Township Building Rental	76	75	0		76	0
YZW	3.4.3	SDN-OPER	NuMI-E Peterson Salary	72	71	1		72	0
			Totals	**153,330**	**134,334**	**15,269**	**688**	**150,291**	**3,038**